Microdata User Guide

RESIDENTIAL TELEPHONE SERVICE SURVEY

May 2003

Statistics Canada Statistique Canada

Canada

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1.0 Introduction

The latest Residential Telephone Service Survey (RTSS) was conducted by Statistics Canada in May 2003 with the cooperation and support of Bell Canada. This manual has been produced to facilitate the manipulation of the microdata file of the survey results.

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2.0 Background

Bell Canada and other companies are from time to time negotiating local service pricing options for phone rates with the Canadian Radio-Television and Telecommunication Commission. Penetration rates are the most reliable indicator of affordability as there is no price range that can be identified as affordable or not affordable. As a result, the importance of monitoring any changes in phone penetration rates and analysing the reasons for non-subscribers is necessary to properly guide regulators in decisions about rate increases, decreases or subsidies.

Concern had been expressed in 1996 that the mechanism for monitoring penetration rates was not adequate in providing timely results to indicate whether Canadian penetration rates fall as a result of increases in local rates. At that time, data on penetration rates were available from the Household Facilities and Equipment Survey but only on an annual basis. Given the changes that were and will be occurring in the basic residential telephone rates, an annual survey was not adequate to accurately reflect the impact that these changes are having on Canadian telephone subscribership.

In 1996 Statistics Canada was approached by Stentor Resource Centre Inc. to conduct a quarterly survey in order to monitor the phone residential penetration rates across Canada. The management of the survey was transferred from Stentor to Bell Canada in the Fall of 1998. Since the year 2000, the survey has been conducted bi-annually as a supplement to the Labour Force Survey.

3.0 Objectives

There are two main objectives which Bell Canada has outlined. They are:

1) to collect information on penetration rates across Canada and make them available by province, and

2) to collect information on non-subscriber characteristics.

To accommodate these goals, and to ensure that the survey is focused on fulfilling these objectives, Bell Canada submitted an analysis plan which outlined their data needs. This plan was used to design the questionnaire and to justify the variables requested.

4.0 Concepts and Definitions

This Chapter outlines concepts and definitions of interest to the users. Users are referred to Chapter 12 of this document for a copy of the actual survey forms used.

Number of telephone numbers for the residence

Includes cellular telephone numbers and telephone numbers used for business even if the business is not within the residence or if the employer is paying for the person's telephone service. It includes cellular telephones from work that are brought home. Pagers are excluded.

Income

Household income has been measured against the 1992-base Statistics Canada Low Income Cut-Offs (LICO) (see Income Statistics Division publication**,** *Low Income Cutoffs from 1992 to 2001 and Low Income Measures from 1991 to 2000*, Catalogue no. 75F0002MIE, for the full definition of LICO). For the purpose of the Residential Telephone Service Survey (RTSS), the low income values used to assess the level of income were rounded to the nearest $500. The total income was collected for the entire household, regardless of family structure. LICOs normally apply to economic families and unattached individuals. Respondents were asked to self-report if their total household income was above or below the modified LICO, with no additional prompting for precision.

Although Statistics Canada's LICOs are often referred to as poverty lines, they do not have an officially recognized status, nor does Statistics Canada promote their use as poverty lines. Since the LICOs are recognized Statistics Canada income measures and as modifications were made to them for the purpose of the RTSS, we recommend that the term 'LICO' not be used to refer to the RTSS income measure as this could be misleading to unadvised readers.

5.0 Survey Methodology

The Residential Telephone Service Survey (RTSS) was administered in May 2003 to a sub-sample of the dwellings in the Labour Force Survey (LFS) sample, and therefore its sample design is closely tied to that of the LFS. The LFS design is briefly described in Sections 5.1 to 5.4[1]. Sections 5.5 and 5.6 describe how the Residential Telephone Service Survey departed from the basic LFS design in May 2003.

5.1 Population Coverage

The LFS is a monthly household survey of a sample of individuals who are representative of the civilian, non-institutionalised population 15 years of age or older in Canada's ten provinces. Specifically excluded from the survey's coverage are residents of the Yukon, Northwest Territories and Nunavut, persons living on Indian Reserves, full-time members of the Canadian Armed Forces and inmates of institutions. These groups together represent an exclusion of approximately 2% of the population aged 15 or over.

5.2 Sample Design

The LFS has undergone an extensive redesign, culminating in the introduction of the new design at the end of 1994. The LFS sample is based upon a stratified, multi-stage design employing probability sampling at all stages of the design. The design principles are the same for each province. A diagram summarizing the design stages can be found in the document AppendixA_LFS.pdf.

5.2.1 Primary Stratification

Provinces are divided into economic regions (ER) and employment insurance economic regions (EIER). ERs are geographic areas of more or less homogeneous economic structure formed on the basis of federal-provincial agreements. They are relatively stable over time. EIERs are also geographic areas, and are roughly the same size and number as ERs, but they do not share the same definitions. Labour force estimates are produced for the EIERs for the use of Human Resources Development Canada.

The intersections of the two types of regions form the first level of stratification for the LFS. These ER/EIER intersections are treated as primary strata and further stratification is carried out within them (see Section 5.2.3). Note that a third set of regions, census metropolitan areas (CMA), is also respected by stratification in the current LFS design, since each CMA is also an EIER.

5.2.2 Types of Areas

The primary strata (ER/EIER intersections) are further disaggregated into three types of areas: rural, urban, and remote areas. Urban and rural areas are loosely based on the Census definitions of urban and rural, with some exceptions to allow for the formation of strata in some areas. Urban areas include the largest CMAs down to the smallest villages categorized by the 1991 Census as urban (1,000 people or more), while rural areas are made up of areas not designated as urban or remote.

[1] A detailed description of the LFS design is available in the Statistics Canada publication entitled *Methodology of the Canadian Labour Force Survey*, Catalogue no. 71-526-XPB.

All urban areas are further subdivided into two types: those using an apartment list frame and an area frame, as well as those using only an area frame.

Approximately 1% of the LFS population is found in remote areas of provinces which are less accessible to LFS interviewers than other areas. For administrative purposes, this portion of the population is sampled separately through the remote area frame. Some populations, not congregated in places of 25 or more people, are excluded from the sampling frame.

5.2.3 Secondary Stratification

In urban areas with sufficiently large numbers of apartment buildings, the strata are subdivided into apartment frames and area frames. The apartment list frame is a register maintained for the 18 largest cities across Canada. The purpose of this is to ensure better representation of apartment dwellers in the sample as well as to minimize the effect of growth in clusters, due to construction of new apartment buildings. In the major cities, the apartment strata are further stratified into low income strata and regular strata.

Where it is possible and/or necessary, the urban area frame is further stratified into regular strata, high income strata, and low population density strata. Most urban areas fall into the regular urban strata, which, in fact, cover the majority of Canada's population. High income strata are found in major urban areas, while low density urban strata consist of small towns that are geographically scattered.

In rural areas, the population density can vary greatly from relatively high population density areas to low population density areas, resulting in the formation of strata that reflect these variations. The different stratification strategies for rural areas were based not only on concentration of population, but also on cost-efficiency and interviewer constraints.

In each province, remote settlements are sampled proportional to the number of dwellings in the settlement, with no further stratification taking place. Dwellings are selected using systematic sampling in each of the places sampled.

5.2.4 Cluster Delineation and Selection

Households in final strata are not selected directly. Instead, each stratum is divided into clusters, and then a sample of clusters is selected within the stratum. Dwellings are then sampled from selected clusters. Different methods are used to define the clusters, depending on the type of stratum.

Within each urban stratum in the urban area frame, a number of geographically contiguous groups of dwellings, or clusters, are formed based upon 1991 Census counts. These clusters are generally a set of one or more city blocks or block-faces. The selection of a sample of clusters (always six or a multiple of six clusters) from each of these secondary strata represents the first stage of sampling in most urban areas. In some other urban areas, census enumeration areas (EA) are used as clusters. In the low density urban strata, a three stage design is followed. Under this design, two towns within a stratum are sampled, and then 6 or 24 clusters within each town are sampled.

For urban apartment strata, instead of defining clusters, the apartment building is the primary sampling unit. Apartment buildings are sampled from the list frame with probability proportional to the number of units in each building.

Within each of the secondary strata in rural areas, where necessary, further stratification is carried out in order to reflect the differences among a number of socio-economic characteristics within each stratum. Within each rural stratum, six EAs or two or three groups of EAs are sampled as clusters.

5.2.5 Dwelling Selection

In all three types of areas (urban, rural and remote areas) selected clusters are first visited by enumerators in the field and a listing of all private dwellings in the cluster is prepared. From the listing, a sample of dwellings is then selected. The sample yield depends on the type of stratum. For example, in the urban area frame, sample yields are either six or eight dwellings, depending on the size of the city. In the urban apartment frame, each cluster yields five dwellings, while in the rural areas and EA parts of cities, each cluster yields 10 dwellings. In all clusters, dwellings are sampled systematically. This represents the final stage of sampling.

5.2.6 Person Selection

Demographic information is obtained for all persons in a household for whom the selected dwelling is the usual place of residence. LFS information is obtained for all civilian household members 15 years of age or older. Respondent burden is minimized for the elderly (age 70 and over) by carrying forward their responses for the initial interview to the subsequent five months in the survey.

5.3 Sample Size

The sample size of eligible persons in the LFS is determined so as to meet the statistical precision requirements for various labour force characteristics at the provincial and sub-provincial level, to meet the requirements of federal, provincial and municipal governments as well as a host of other data users.

The monthly LFS sample consists of approximately 60,000 dwellings. After excluding dwellings found to be vacant, dwellings demolished or converted to non-residential uses, dwellings containing only ineligible persons, dwellings under construction, and seasonal dwellings, about 54,000 dwellings remain which are occupied by one or more eligible persons. From these dwellings, LFS information is obtained for approximately 102,000 civilians aged 15 or over.

5.4 Sample Rotation

The LFS follows a rotating panel sample design, in which households remain in the sample for six consecutive months. The total sample consists of six representative sub-samples or panels, and each month a panel is replaced after completing its six month stay in the survey. Outgoing households are replaced by households in the same or a similar area. This results in a five-sixths month-to-month sample overlap, which makes the design efficient for estimating month-to-month changes. The rotation after six months prevents undue respondent burden for households that are selected for the survey.

Because of the rotation group feature, it is possible to readily conduct supplementary surveys using the LFS design but employing less than the full size sample.

5.5 Modifications to the Labour Force Survey Design for the Residential Telephone Service Survey

The Residential Telephone Service Survey used five of the six rotation groups in the May 2003 LFS sample. For the RTSS, the coverage of the LFS was set at the household level. However, unlike the LFS where information is collected for all eligible household members, the Residential Telephone Service Survey only collected information from one household member who reported about the household.

5.6 Sample Size by Province for the Residential Telephone Service Survey

The following table shows the number of household members in the LFS sampled rotations who were eligible for the Residential Telephone Service Survey supplement. This table includes households which were non-respondents to the LFS.

Province	**Sample Size**
Newfoundland and Labrador	1,638
Prince Edward Island	1,149
Nova Scotia	2,546
New Brunswick	2,364
Quebec	8,256
Ontario	12,866
Manitoba	3,189
Saskatchewan	3,265
Alberta	4,393
British Columbia	4,235
Canada	**43,901**

6.0 Data Collection

Data collection for the Labour Force Survey (LFS) is carried out each month during the week following the LFS reference week. The reference week is normally the week containing the 15th day of the month.

6.1 Interviewing for the Labour Force Survey

Statistics Canada interviewers are part-time employees hired and trained to carry out the LFS and other household surveys. Each month they contact the sampled dwellings to obtain the required labour force information. Each interviewer contacts approximately 75 dwellings per month.

Dwellings new to the sample are usually contacted through a personal visit using the Computer-assisted personal interview (CAPI). The interviewer first obtains socio-demographic information for each household member and then obtains labour force information for all members aged 15 and over who are not members of the regular armed forces. Provided there is a telephone in the dwelling and permission has been granted, subsequent interviews are conducted by telephone. This is done out of a centralized Computer-assisted telephone interviewing (CATI) unit where cases are assigned randomly to interviewers. As a result, approximately 85% of all households are interviewed by telephone. In these subsequent monthly interviews, the interviewer confirms the socio-demographic information collected in the first month and collects the labour force information for the current month.

In each dwelling, information about all household members is usually obtained from one knowledgeable household member. Such 'proxy' reporting, which accounts for approximately 65% of the information collected, is used to avoid the high cost and extended time requirements that would be involved in repeat visits or calls necessary to obtain information directly from each respondent.

If, during the course of the six months that a dwelling normally remains in the sample, an entire household moves out and is replaced by a new household, information is obtained about the new household for the remainder of the six-month period.

At the conclusion of the LFS monthly interviews, interviewers introduce the supplementary survey, if any, to be administered to some or all household members that month.

6.2 Supervision and Quality Control

All LFS interviewers are under the supervision of a staff of senior interviewers who are responsible for ensuring that interviewers are familiar with the concepts and procedures of the LFS and its many supplementary surveys, and also for periodically monitoring their interviewers and reviewing their completed documents. The senior interviewers are, in turn, under the supervision of the LFS program managers, located in each of the Statistics Canada regional offices.

6.3 Non-response to the Labour Force Survey

Interviewers are instructed to make all reasonable attempts to obtain LFS interviews with members of eligible households. For individuals who at first refuse to participate in the LFS, a letter is sent from the Regional Office to the dwelling address stressing the importance of the survey and the household's cooperation. This is followed by a second call (or visit) from the interviewer. For cases in which the timing of the interviewer's call (or visit) is inconvenient, an appointment is arranged to call back at a more convenient time. For cases

in which there is no one home, numerous call backs are made. Under no circumstances are sampled dwellings replaced by other dwellings for reasons of non-response.

Each month, after all attempts to obtain interviews have been made, a small number of non-responding households remain. For households non-responding to the LFS and for which LFS information was obtained in the previous month, this information is brought forward and used as the current month's LFS information. No supplementary survey information is collected for these households.

6.4 Data Collection Modifications for the Residential Telephone Service Survey

Information for the Residential Telephone Service Survey (RTSS) was obtained from a knowledgeable household member. Upon completion of the Labour Force Survey interview, the interviewer introduced the RTSS and proceeded with the interview with the respondent's permission.

The Residential Telephone Service Survey was programmed to appear on the list of surveys to be completed on the notebook computer after the demographic component for the LFS had been completed. Any RTSS component not completed at the time the LFS was transmitted to one of the Statistics Canada regional offices was left incomplete and transmitted with the LFS.

6.5 Non-response to the Residential Telephone Service Survey

For households responding to the LFS, the next stage of data collection was to administer the Residential Telephone Service Survey. In total, 43,901 individuals were eligible for the supplementary survey; the RTSS interview was completed for 39,924 of these individuals for a response rate of 90.9%. More detailed information on response rates is presented in Chapter 8 (Data Quality).

7.0 Data Processing

The main output of the Residential Telephone Service Survey (RTSS) is a "clean" microdata file. This Chapter presents a brief summary of the processing steps involved in producing this file.

7.1 Data Capture

Responses to survey questions are captured directly by the interviewer at the time of the interview using a computerized questionnaire. The computerized questionnaire reduces processing time and costs associated with data entry, transcription errors, and data transmission. The response data are encrypted to ensure confidentiality and sent via modem to the appropriate Statistics Canada Regional Office. From there they are transmitted over a secure line to Ottawa for further processing. In total 40,985 documents were captured and transmitted for the survey.

7.2 Editing

The first type of error treated was errors in questionnaire flow, where questions which did not apply to the respondent (and should therefore not have been answered) were found to contain answers. In this case a computer edit automatically eliminated superfluous data by following the flow of the questionnaire implied by answers to previous, and in some cases, subsequent questions.

The second type of error treated involved a lack of information in questions which should have been answered. For this type of error, a non-response or "not-stated" code was assigned to the item.

7.3 Coding of Open-ended Questions

No data items on the questionnaire were recorded by interviewers in an open-ended format. A total of two partially open-ended questions were included in the survey. These were items relating to reasons households do not have telephone service for their residence and why they cancelled their telephone service.

7.4 Creation of Derived Variables

A number of data items on the microdata file have been derived by combining items on the questionnaire in order to facilitate data analysis. The variable CMA, for example, is actually a combination of census metropolitan area (CMA) and census agglomeration (CA). The CAs have been recoded to 0, while the CMAs remain the same. A 'size of area of residence' variable was also created. This variable provides a population size code based on 1991 Census definitions for every urban/non-urban area in the Labour Force Survey (LFS) sample frame.

7.5 Weighting

The principle behind estimation in a probability sample such as the LFS is that each person in the sample "represents", besides himself or herself, several other persons not in the sample. For example, in a simple random 2% sample of the population, each person in the sample represents 50 persons in the population. The same principle also applies to households.

The weighting phase is a step which calculates, for each record, what this number is. This weight appears on the microdata file, and **must** be used to derive meaningful estimates from the survey. For example, if the number of households with one or more telephone numbers

for their residence is to be estimated, it is done by selecting the records referring to those households in the sample with that characteristic and summing the weights entered on those records.

Details of the method used to calculate these weights are presented in Chapter 11.

7.6 Suppression of Confidential Information

It should be noted that the 'Public Use' microdata files described above differ in a number of important respects from the survey 'master' files held by Statistics Canada. These differences are the result of actions taken to protect the anonymity of individual survey respondents. Users requiring access to information excluded from the microdata files may purchase custom tabulations. Estimates generated will be released to the user, subject to meeting the guidelines for analysis and release outlined in Chapter 9 of this document.

Province - Suppression of Geographic Identifiers

The survey master data file includes explicit geographic identifiers for province and census metropolitan area. It is also possible to obtain, where sample sizes permit, estimates by urban size class. The survey public use microdata files usually do not contain any geographic identifiers below the provincial level. However, since the RTSS is a household based survey, the variables CMA and urban size class are on the microdata file.

8.0 Data Quality

8.1 Response Rates

The following table summarizes the response rates to the Labour Force Survey (LFS) and to the Residential Telephone Service Survey (RTSS) in May 2003.

Province	**Household response rate for full LFS* May 2003**	**Household response rate for LFS rotations 1,2,3,4 and 6***	**Household response rate to RTSS****	**Number of respondents in RTSS**
		%		
Newfoundland and Labrador	94.3	94.0	92.3	1,512
Prince Edward Island	93.7	93.8	93.2	1,071
Nova Scotia	95.3	95.2	93.0	2,369
New Brunswick	94.4	94.5	93.0	2,198
Québec	94.9	94.9	90.3	7,453
Ontario	93.3	93.4	90.4	11,625
Manitoba	94.8	94.9	91.0	2,903
Saskatchewan	95.3	94.9	91.2	2,979
Alberta	94.9	95.0	93.0	4,085
British Columbia	94.1	94.3	88.1	3,729
Canada	**94.3**	**94.4**	**90.9**	**39,924**

* Response rate is the number of responding households as a percentage of the number of eligible households.

** Response rate is the number of households responding to RTSS as a percentage of the number of households responding to, or imputed by the LFS, in the rotations sampled.

8.2 Survey Errors

The estimates derived from this survey are based on a sample of households. Somewhat different estimates might have been obtained if a complete census had been taken using the same questionnaire, interviewers, supervisors, processing methods, etc. as those actually used in the survey. The difference between the estimates obtained from the sample and those resulting from a complete count taken under similar conditions is called the sampling error of the estimate.

Errors which are not related to sampling may occur at almost every phase of a survey operation. Interviewers may misunderstand instructions, respondents may make errors in answering questions, the answers may be incorrectly entered on the questionnaire and errors may be introduced in the processing and tabulation of the data. These are all examples of non-sampling errors.

Over a large number of observations, randomly occurring errors will have little effect on estimates derived from the survey. However, errors occurring systematically will contribute to biases in the survey estimates. Considerable time and effort was made to reduce

non-sampling errors in the survey. Quality assurance measures were implemented at each step of the data collection and processing cycle to monitor the quality of the data. These measures include the use of highly skilled interviewers, extensive training of interviewers with respect to the survey procedures and questionnaire, observation of interviewers to detect problems of questionnaire design or misunderstanding of instructions, procedures to ensure that data capture errors were minimized and coding and edit quality checks to verify the processing logic.

8.2.1 The Frame

Because the Residential Telephone Service Survey was a supplement to the LFS, the frame used was the LFS frame. Any non-response to the LFS had an impact on the RTSS frame. Because non-response to the LFS is quite low (usually less than 5%) this impact was minimal. The quality of the sampling variables in the frame was very high. The RTSS sample consisted of five rotation groups from the LFS. No records were dropped due to missing rotation group number or any other type of sampling variable.

Note that the LFS frame excludes about 2% of all households in the 10 provinces of Canada. Therefore, the RTSS frame also excludes the same proportion of households in the same geographical area. It is unlikely that this exclusion introduces any significant bias into the survey data.

All variables in the LFS frame are updated monthly.

Some variables on the sampling frame play a critical role with respect to the software application used in the survey. For example, in the RTSS computer-assisted interviewing (CAI) application, each record must have accurate stratum, cluster and rotation group codes. These variables are always of very high quality each month in the LFS.

At times, duplication of records occurs. This did not happen in May 2003.

8.2.2 Data Collection

Interviewer training consisted of reading the RTSS Procedures Manual, practicing with the RTSS training cases on the laptop computer, and discussing any questions with senior interviewers before the start of the survey. A description of the background and objectives of the survey was provided, as well as a glossary of terms and a set of questions and answers. Interviewers collected RTSS information after the LFS information was collected. The collection period ran from the 18th to the 24th of May, 2003.

8.2.3 Data Processing

During processing of the data, 27 RTSS records did not match to corresponding records in the LFS. Thus they were coded as out-of-scope and were dropped from further processing. When supplementary survey records do not match to host survey records they must be dropped since a weight cannot be derived for them.

Conversely, 2,943 records in the LFS were found that should have matched to an RTSS record but did not. These records were coded as in-scope, since they were eligible records from the frame which, for one reason or another, did not

have corresponding RTSS records. These records were considered to be non-responding records, and were used in the weighting process to adjust for non-response.

Data processing of the RTSS was straightforward since there were only nine questions on the CAI application. Any record that contained a refusal or don't know in the first question (Q01B) was coded as a non-response. Note that 1,036 records were treated this way. Since the data was collected using a CAI instrument, data quality before processing was very high. Very few changes were made to the data during editing.

No imputation was done for this survey.

8.2.4 Non-response

A major source of non-sampling errors in surveys is the effect of non-response on the survey results. The extent of non-response varies from partial non-response (failure to answer just one or some questions) to total non-response. Total non-response occurred because the interviewer was either unable to contact the respondent, no member of the household was able to provide the information, or the respondent refused to participate in the survey. Total non-response was handled by adjusting the weight of households who responded to the survey to compensate for those who did not respond.

In most cases, partial non-response to the survey occurred when the respondent did not understand or misinterpreted a question, refused to answer a question, or could not recall the requested information.

Item non-response is usually very low for the RTSS. Questions Q01C, Q02, Q03, Q041, Q042, Q043, Q044, Q045 and Q046 all had non-response rates which were less than 1.4%. Question Q08, which was the income class question, had a non-response rate of 3.9%, which is considered to be quite low, especially for an income related question.

8.2.5 Measurement of Sampling Error

Since it is an unavoidable fact that estimates from a sample survey are subject to sampling error, sound statistical practice calls for researchers to provide users with some indication of the magnitude of this sampling error. This section of the documentation outlines the measures of sampling error which Statistics Canada commonly uses and which it urges users producing estimates from this microdata file to use also.

The basis for measuring the potential size of sampling errors is the standard error of the estimates derived from survey results.

However, because of the large variety of estimates that can be produced from a survey, the standard error of an estimate is usually expressed relative to the estimate to which it pertains. This resulting measure, known as the coefficient of variation (CV) of an estimate, is obtained by dividing the standard error of the estimate by the estimate itself and is expressed as a percentage of the estimate.

For example, suppose that, based upon the survey results, one estimates that 1.5% of Canadian households did not have telephone service to their residence during the given month, and this estimate is found to have a standard error of 0.00092. Then the coefficient of variation of the estimate is calculated as:

$$\left(\frac{0.00092}{0.015} \right) X \; 100 \; \% = 6.1 \%$$

There is more information on the calculation of CV in Chapter 10.

9.0 Guidelines for Tabulation, Analysis and Release

This Chapter of the documentation outlines the guidelines to be adhered to by users tabulating, analysing, publishing or otherwise releasing any data derived from the survey microdata files. With the aid of these guidelines, users of microdata should be able to produce the same figures as those produced by Statistics Canada and, at the same time, will be able to develop currently unpublished figures in a manner consistent with these established guidelines.

9.1 Rounding Guidelines

In order that estimates for publication or other release derived from these microdata files correspond to those produced by Statistics Canada, users are urged to adhere to the following guidelines regarding the rounding of such estimates:

a) Estimates in the main body of a statistical table are to be rounded to <u>the nearest hundred units</u> using the normal rounding technique. In normal rounding, if the first or only digit to be dropped is 0 to 4, the last digit to be retained is not changed. If the first or only digit to be dropped is 5 to 9, the last digit to be retained is raised by one. For example, in normal rounding to the nearest 100, if the last two digits are between 00 and 49, they are changed to 00 and the preceding digit (the hundreds digit) is left unchanged. If the last two digits are between 50 and 99 they are changed to 00 and the preceding digit is incremented by 1.

b) Marginal sub-totals and totals in statistical tables are to be derived from their corresponding unrounded components and then are to be rounded themselves to the nearest 100 units using normal rounding.

c) Averages, proportions, rates and percentages are to be computed from unrounded components (i.e. numerators and/or denominators) and then are <u>to be rounded themselves to one decimal</u> using normal rounding. In normal rounding to a single digit, if the final or only digit to be dropped is 0 to 4, the last digit to be retained is not changed. If the first or only digit to be dropped is 5 to 9, the last digit to be retained is increased by 1.

d) Sums and differences of aggregates (or ratios) are to be derived from their corresponding unrounded components and then are to be rounded themselves to the nearest 100 units (or the nearest one decimal) using normal rounding.

e) In instances where, due to technical or other limitations, a rounding technique other than normal rounding is used resulting in estimates to be published or otherwise released which differ from corresponding estimates published by Statistics Canada, users are urged to note the reason for such differences in the publication or release document(s).

f) Under no circumstances are unrounded estimates to be published or otherwise released by users. Unrounded estimates imply greater precision than actually exists.

9.2 Sample Weighting Guidelines for Tabulation

The sample design used for the Residential Telephone Service Survey (RTSS) was not self-weighting. When producing simple estimates, including the production of ordinary statistical tables, users must apply the proper sampling weight.

If proper weights are not used, the estimates derived from the microdata files cannot be considered to be representative of the survey population, and will not correspond to those produced by Statistics Canada.

Users should also note that some software packages may not allow the generation of estimates that exactly match those available from Statistics Canada, because of their treatment of the weight field.

9.3 Definitions of Types of Estimates: Categorical and Quantitative

Before discussing how the Residential Telephone Service Survey data can be tabulated and analysed, it is useful to describe the two main types of point estimates of population characteristics which can be generated from the microdata file for the RTSS.

9.3.1 Categorical Estimates

Categorical estimates are estimates of the number, or percentage of the surveyed population possessing certain characteristics or falling into some defined category. The number of households which did not have telephone service for their residence during the reference month or the proportion of households which had two or more telephone lines for their residence are examples of such estimates. An estimate of the number of persons possessing a certain characteristic may also be referred to as an estimate of an aggregate.

Examples of Categorical Questions:

Q: How many different telephone numbers are there for your residence?
R: 0, 1, 2, 3 or more

Q: In 2002, was your total annual household income before taxes and deductions less or more than LICO?
R: Less than, more than

9.3.2 Quantitative Estimates

Quantitative estimates are estimates of totals or of means, medians and other measures of central tendency of quantities based upon some or all of the members of the surveyed population. They also specifically involve estimates of the form $\hat{X} / \hat{Y}$ where $\hat{X}$ is an estimate of surveyed population quantity total and $\hat{Y}$ is an estimate of the number of persons in the surveyed population contributing to that total quantity. Note that there were no true quantitative questions in the RTSS application.

An example of a quantitative estimate is the average number of weeks for which employment insurance was collected for absences due to illness (taken from an unemployment survey). The numerator is an estimate of the total number of weeks for which employment insurance was collected for all persons experiencing an absence due to illness, and its denominator is the number of persons reporting an absence due to illness.

Examples of Quantitative Questions:

Q: How many consecutive weeks was this last absence?
R: |_|_| Weeks

Q: How many separate periods of 2 or more weeks were you unable to work due to your own illness, accident or pregnancy?
R: |_|_| Periods

9.3.3 Tabulation of Categorical Estimates

Estimates of the number of people with a certain characteristic can be obtained from the microdata file by summing the final weights of all records possessing the characteristic(s) of interest. Proportions and ratios of the form $\hat{X} / \hat{Y}$ are obtained by:

a) summing the final weights of records having the characteristic of interest for the numerator $(\hat{X})$,

b) summing the final weights of records having the characteristic of interest for the denominator $(\hat{Y})$, then

c) divide estimate a) by estimate b) $(\hat{X} / \hat{Y})$.

9.3.4 Tabulation of Quantitative Estimates

Estimates of quantities can be obtained from the microdata file by multiplying the value of the variable of interest by the final weight for each record, then summing this quantity over all records of interest. For example, to obtain an estimate of the total number of weeks of employment insurance (EI) received by women whose last absence was due to pregnancy, multiply the value reported in question Q17B (weeks received EI) by the final weight for the record, then sum this value over all records with Q14 = 4 (last absence due to pregnancy).

To obtain a weighted average of the form $\hat{X} / \hat{Y}$, the numerator $(\hat{X})$ is calculated as for a quantitative estimate and the denominator $(\hat{Y})$ is calculated as for a categorical estimate. For example, to estimate the average number of weeks EI was received by women whose last absence was due to pregnancy:

a) estimate the total number of weeks $(\hat{X})$ as described above,
b) estimate the number of women $(\hat{Y})$ in this category by summing the final weights of all records with Q14 = 4, then
c) divide estimate a) by estimate b) $(\hat{X} / \hat{Y})$.

9.4 Guidelines for Statistical Analysis

The Residential Telephone Service Survey is based upon a complex sample design, with stratification, multiple stages of selection, and unequal probabilities of selection of respondents. Using data from such complex surveys presents problems to analysts because the survey design and the selection probabilities affect the estimation and variance calculation procedures that should be used. In order for survey estimates and analyses to be free from bias, the survey weights must be used.

While many analysis procedures found in statistical packages allow weights to be used, the meaning or definition of the weight in these procedures differ from that which is appropriate in a sample survey framework, with the result that while in many cases the estimates produced by the packages are correct, the variances that are calculated are poor. Approximate variances for simple estimates such as totals, proportions and ratios (for qualitative variables) can be derived using the accompanying Approximate Sampling Variability Tables.

For other analysis techniques (for example linear regression, logistic regression and analysis of variance), a method exists which can make the variances calculated by the standard packages more meaningful, by incorporating the unequal probabilities of selection. The method rescales the weights so that there is an average weight of 1.

For example, suppose that analysis of all male respondents is required. The steps to rescale the weights are as follows:

1) select all respondents from the file who reported SEX = men;

2) calculate the AVERAGE weight for these records by summing the original person weights from the microdata file for these records and then dividing by the number of respondents who reported SEX = men;

3) for each of these respondents, calculate a RESCALED weight equal to the original person weight divided by the AVERAGE weight;

4) perform the analysis for these respondents using the RESCALED weight.

However, because the stratification and clustering of the sample's design are still not taken into account, the variance estimates calculated in this way are likely to be under-estimates.

The calculation of more precise variance estimates requires detailed knowledge of the design of the survey. Such detail cannot be given in this microdata file because of confidentiality. Variances that take the complete sample design into account can be calculated for many statistics by Statistics Canada on a cost-recovery basis.

9.5 Coefficient of Variation Release Guidelines

Before releasing and/or publishing any estimate from the Residential Telephone Service Survey, users should first determine the quality level of the estimate. The quality levels are *acceptable*, *marginal* and *unacceptable*. Data quality is affected by both sampling and non-sampling errors as discussed in Chapter 8. However for this purpose, the quality level of an estimate will be determined only on the basis of sampling error as reflected by the coefficient of variation as shown in the table below. Nonetheless users should be sure to read Chapter 8 to be more fully aware of the quality characteristics of these data.

First, the number of respondents who contribute to the calculation of the estimate should be determined. If this number is less than 30, the weighted estimate should be considered to be of unacceptable quality.

For weighted estimates based on sample sizes of 30 or more, users should determine the coefficient of variation of the estimate and follow the guidelines below. These quality level guidelines should be applied to weighted rounded estimates.

All estimates can be considered releasable. However, those of marginal or unacceptable quality level must be accompanied by a warning to caution subsequent users.

Quality Level Guidelines

Quality Level of Estimate	**Guidelines**
1) Acceptable	Estimates have: a sample size of 30 or more, and low coefficients of variation in the range of 0.0% - 16.5% No warning is required.
2) Marginal	Estimates have: a sample size of 30 or more, and high coefficients of variation in the range of 16.6% - 33.3%. Estimates should be flagged with the letter M (or some similar identifier). They should be accompanied by a warning to caution subsequent users about the high levels of error, associated with the estimates.
3) Unacceptable	Estimates have: a sample size of less than 30, or very high coefficients of variation in excess of 33.3%. Statistics Canada recommends not to release estimates of unacceptable quality. However, if the user chooses to do so then estimates should be flagged with the letter U (or some similar identifier) and the following warning should accompany the estimates: "Please be warned that these estimates [flagged with the letter U] do not meet Statistics Canada's quality standards. Conclusions based on these data will be unreliable, and most likely invalid."

9.6 Release Cut-off's for the Residential Telephone Service Survey

The following table provides an indication of the precision of population estimates as it shows the release cut-offs associated with each of the three quality levels presented in the previous section. These cut-offs are derived from the coefficient of variation (CV) tables discussed in Chapter 10.

For example, the table shows that the quality of a weighted estimate of 5,000 people possessing a given characteristic in Newfoundland and Labrador is marginal.

Note that these cut-offs apply to estimates of population totals only. To estimate ratios, users should not use the numerator value (nor the denominator) in order to find the corresponding quality level. Rule 4 in Section 10.1 and Example 4 in Section 10.1.1 explains the correct procedure to be used for ratios.

Province and Region	**Acceptable CV 0.0% - 16.5%**		**Marginal CV 16.6% - 33.3%**			**Unacceptable CV > 33.3%**	
Newfoundland and Labrador	5,500	& over	1,500	to <	5,500	under	1,500
Prince Edward Island	2,500	& over	500	to <	2,500	under	500
Nova Scotia	10,000	& over	2,500	to <	10,000	under	2,500
New Brunswick	8,500	& over	2,000	to <	8,500	under	2,000
Quebec	33,500	& over	8,500	to <	33,500	under	8,500
Ontario	23,500	& over	6,000	to <	23,500	under	6,000
Manitoba	10,000	& over	2,500	to <	10,000	under	2,500
Saskatchewan	6,500	& over	1,500	to <	6,500	under	1,500
Alberta	19,500	& over	5,000	to <	19,500	under	5,000
British Columbia	23,000	& over	5,500	to <	23,000	under	5,500
Atlantic Provinces	8,000	& over	2,000	to <	8,000	under	2,000
Prairie Provinces	13,000	& over	3,000	to <	13,000	under	3,000
Canada	**24,000**	**& over**	**6,000**	**to** <	**24,000**	**under**	**6,000**

10.0 Approximate Sampling Variability Tables

In order to supply coefficients of variation (CV) which would be applicable to a wide variety of categorical estimates produced from this microdata file and which could be readily accessed by the user, a set of Approximate Sampling Variability Tables has been produced. These CV tables allow the user to obtain an approximate coefficient of variation based on the size of the estimate calculated from the survey data.

The coefficients of variation are derived using the variance formula for simple random sampling and incorporating a factor which reflects the multi-stage, clustered nature of the sample design. This factor, known as the design effect, was determined by first calculating design effects for a wide range of characteristics and then choosing from among these a conservative value (usually the 75th percentile) to be used in the CV tables which would then apply to the entire set of characteristics.

The table below shows the conservative value of the design effects as well as sample sizes and population counts by province which were used to produce the Approximate Sampling Variability Tables for the Residential Telephone Service Survey (RTSS) .

Province and Region	**Design Effect**	**Sample Size**	**Population**
Newfoundland and Labrador	1.24	1,512	197,514
Prince Edward Island	1.33	1,071	53,866
Nova Scotia	1.79	2,369	369,873
New Brunswick	1.75	2,198	292,904
Quebec	2.21	7,453	3,109,221
Ontario	1.65	11,625	4,558,427
Manitoba	1.87	2,903	431,859
Saskatchewan	1.46	2,979	383,326
Alberta	1.88	4,085	1,170,038
British Columbia	1.47	3,729	1,624,276
Atlantic Provinces	1.78	7,150	914,157
Prairie Provinces	1.81	9,967	1,985,223
Canada	**2.13**	**39,924**	**12,191,305**

All coefficients of variation in the Approximate Sampling Variability Tables are approximate and, therefore, unofficial. Estimates of actual variance for specific variables may be obtained from Statistics Canada on a cost-recovery basis. Since the approximate CV is conservative, the use of actual variance estimates may cause the estimate to be switched from one quality level to another. For instance a *marginal* estimate could become *acceptable* based on the exact CV calculation.

Remember: If the number of observations on which an estimate is based is less than 30, the weighted estimate is most likely unacceptable and Statistics Canada recommends not to release such an estimate, regardless of the value of the coefficient of variation.

10.1 How to Use the Coefficient of Variation Tables for Categorical Estimates

The following rules should enable the user to determine the approximate coefficients of variation from the Approximate Sampling Variability Tables for estimates of the number, proportion or percentage of the surveyed population possessing a certain characteristic and for ratios and differences between such estimates.

Rule 1: Estimates of Numbers of Households Possessing a Characteristic (Aggregates)

The coefficient of variation depends only on the size of the estimate itself. On the Approximate Sampling Variability Table for the appropriate geographic area, locate the estimated number in the left-most column of the table (headed "Numerator of Percentage") and follow the asterisks (if any) across to the first figure encountered. This figure is the approximate coefficient of variation.

Rule 2: Estimates of Proportions or Percentages of Households Possessing a Characteristic

The coefficient of variation of an estimated proportion or percentage depends on both the size of the proportion or percentage and the size of the total upon which the proportion or percentage is based. Estimated proportions or percentages are relatively more reliable than the corresponding estimates of the numerator of the proportion or percentage, when the proportion or percentage is based upon a sub-group of the population. For example, the proportion of households which did not have telephone service for their residence during the reference period is more reliable than the estimated number of households which did not have telephone service for their residence during the reference period. (Note that in the tables the coefficients of variation decline in value reading from left to right).

When the proportion or percentage is based upon the total population of the geographic area covered by the table, the CV of the proportion or percentage is the same as the CV of the numerator of the proportion or percentage. In this case, Rule 1 can be used.

When the proportion or percentage is based upon a subset of the total population (e.g. those in a particular province or census metropolitan area), reference should be made to the proportion or percentage (across the top of the table) and to the numerator of the proportion or percentage (down the left side of the table). The intersection of the appropriate row and column gives the coefficient of variation.

Rule 3: Estimates of Differences Between Aggregates or Percentages

The standard error of a difference between two estimates is approximately equal to the square root of the sum of squares of each standard error considered separately. That is, the standard error of a difference $\left(\hat{d} = \hat{X}_1 - \hat{X}_2\right)$ is:

$$\sigma_{\hat{d}} = \sqrt{\left(\hat{X}_1\alpha_1\right)^2 + \left(\hat{X}_2\alpha_2\right)^2}$$

where $\hat{X}_1$ is estimate 1, $\hat{X}_2$ is estimate 2, and α_1 and α_2 are the coefficients of variation of $\hat{X}_1$ and $\hat{X}_2$ respectively. The coefficient of variation of $\hat{d}$ is given by $\sigma_{\hat{d}} / \hat{d}$. This formula is accurate for the difference between separate and uncorrelated characteristics, but is only approximate otherwise.

Rule 4: Estimates of Ratios

In the case where the numerator is a subset of the denominator, the ratio should be converted to a percentage and Rule 2 applied. This would apply, for example, to the case where the denominator is the number of households which did not have telephone service for their residence during the reference period and the numerator is the number of households which did not have telephone service to their residence during the reference period because they could not afford it.

In the case where the numerator is not a subset of the denominator, as for example, the ratio of the number of households in Quebec whose total annual income for 2002 was below the low income cut-off as compared to the number of households in Ontario whose total annual income for 2002 was below the low income cut-off, the standard deviation of the ratio of the estimates is approximately equal to the square root of the sum of squares of each coefficient of variation considered separately multiplied by $\hat{R}$. That is, the standard error of a ratio $\left(\hat{R} = \hat{X}_1 / \hat{X}_2\right)$ is:

$$\sigma_{\hat{R}} = \hat{R}\sqrt{\alpha_1^{\;2} + \alpha_2^{\;2}}$$

where α_1 and α_2 are the coefficients of variation of $\hat{X}_1$ and $\hat{X}_2$ respectively. The coefficient of variation of $\hat{R}$ is given by $\sigma_{\hat{R}} / \hat{R}$. The formula will tend to overstate the error, if $\hat{X}_1$ and $\hat{X}_2$ are positively correlated and understate the error if $\hat{X}_1$ and $\hat{X}_2$ are negatively correlated.

Rule 5: Estimates of Differences of Ratios

In this case, Rules 3 and 4 are combined. The CVs for the two ratios are first determined using Rule 4, and then the CV of their difference is found using Rule 3.

10.1.1 Examples of Using the Coefficient of Variation Tables for Categorical Estimates

The following examples based on the November 2002 survey are included to assist users in applying the foregoing rules. Please note that the data for these examples are different than the results obtained from the current survey and are only to be used as a guide.

Example 1: Estimates of Numbers of Households Possessing a Characteristic (Aggregates)

Suppose that a user estimates that 177,859 households did not have telephone service for their residence during the reference period. How does the user determine the coefficient of variation of this estimate?

1) Refer to the coefficient of variation table for CANADA.

2) The estimated aggregate (177,859) does not appear in the left-hand column (the 'Numerator of Percentage' column), so it is necessary to use the figure closest to it, namely 200,000.

3) The coefficient of variation for an estimated aggregate is found by referring to the first non-asterisk entry on that row, namely, 5.6%.

RESIDENTIAL TELEPHONE SERVICE SURVEY - NOVEMBER 2002
Approximate Sampling Variability Tables - Canada

NUMERATOR OF PERCENTAGE ('000)	ESTIMATED PERCENTAGE 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	…	35.0%	40.0%	50.0%	70.0%	90.0%
1	79.3	79.0	78.6	77.4	75.3	73.2	71.0		64.0	61.5	56.1	43.5	25.1
2	56.1	55.8	55.6	54.7	53.2	51.7	50.2		45.3	43.5	39.7	30.7	17.7
3	45.8	45.6	45.4	44.7	43.5	42.3	41.0		36.9	35.5	32.4	25.1	14.5
4	39.7	39.5	39.3	38.7	37.7	36.6	35.5		32.0	30.7	28.1	21.7	12.6
5	35.5	35.3	35.1	34.6	33.7	32.7	31.8		28.6	27.5	25.1	19.4	11.2
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50	********	11.2	11.1	10.9	10.6	10.3	10.0		9.1	8.7	7.9	6.1	3.5
55	********	10.6	10.6	10.4	10.2	9.9	9.6		8.6	8.3	7.6	5.9	3.4
60	********	10.2	10.1	10.0	9.7	9.4	9.2		8.3	7.9	7.2	5.6	3.2
65	********	9.8	9.7	9.6	9.3	9.1	8.8		7.9	7.6	7.0	5.4	3.1
70	********	9.4	9.4	9.2	9.0	8.7	8.5		7.6	7.3	6.7	5.2	3.0
75	********	9.1	9.1	8.9	8.7	8.5	8.2		7.4	7.1	6.5	5.0	2.9
80	********	8.8	8.8	8.6	8.4	8.2	7.9		7.2	6.9	6.3	4.9	2.8
85	********	8.6	8.5	8.4	8.2	7.9	7.7		6.9	6.7	6.1	4.7	2.7
90	********	8.3	8.3	8.2	7.9	7.7	7.5		6.7	6.5	5.9	4.6	2.6
95	********	8.1	8.1	7.9	7.7	7.5	7.3		6.6	6.3	5.8	4.5	2.6
100	********	7.9	7.9	7.7	7.5	7.3	7.1		6.4	6.1	**5.6**	4.3	2.5
125	********	********	7.0	6.9	6.7	6.5	6.4		5.7	5.5	5.0	3.9	2.2
150	********	********	6.4	6.3	6.1	6.0	5.8		5.2	5.0	4.6	3.5	2.0
200	********	********	**5.6**	5.5	5.3	5.2	5.0		4.5	4.3	4.0	3.1	1.8
250	********	********	********	4.9	4.8	4.6	4.5		4.0	3.9	3.5	2.7	1.6
300	********	********	********	4.5	4.3	4.2	4.1		3.7	3.5	3.2	2.5	1.4
350	********	********	********	4.1	4.0	3.9	3.8		3.4	3.3	3.0	2.3	1.3
400	********	********	********	3.9	3.8	3.7	3.5		3.2	3.1	2.8	2.2	1.3
450	********	********	********	3.6	3.5	3.4	3.3		3.0	2.9	2.6	2.0	1.2
500	********	********	********	3.5	3.4	3.3	3.2		2.9	2.7	2.5	1.9	1.1
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8000	********	********	********	********	********	********	********		********	********	********	0.5	0.3
9000	********	********	********	********	********	********	********		********	********	********	********	0.3
10000	********	********	********	********	********	********	********		********	********	********	********	0.3

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

4) So the approximate coefficient of variation of the estimate is 5.6%. The finding that 177,859 (to be rounded according to the rounding guidelines in Section 9.1) households did not have telephone service for their residence during the reference period is publishable with no qualifications.

Example 2: Estimates of Proportions or Percentages of Households Possessing a Characteristic

Suppose that the user estimates that 100,791 / 177,859 = 56.7% of households which did not have telephone service for their residence during the reference period reported that they could not afford telephone service. How does the user determine the coefficient of variation of this estimate?

1) Refer to the coefficient of variation table for CANADA (see above).

2) Because the estimate is a percentage which is based on a subset of the total population (i.e., households which did not have telephone service for their residence during the reference period), it is necessary to use both the percentage (56.7%) and the numerator portion of the percentage (100,791) in determining the coefficient of variation.

3) The numerator, 100,791 does not appear in the left-hand column (the 'Numerator of Percentage' column) so it is necessary to use the figure closest to it, namely 100,000. Similarly, the percentage estimate does not appear as any of the column headings, so it is necessary to use the figure closest to it, 50.0%.

4) The figure at the intersection of the row and column used, namely 5.6% is the coefficient of variation to be used.

5) So the approximate coefficient of variation of the estimate is 5.6%. The finding that 56.7% of households which did not have telephone service for their residence during the reference period could not afford telephone service can be published with no qualifications.

Example 3: Estimates of Differences Between Aggregates or Percentages

Suppose that a user estimates that 796,352 / 3,103,651 = 25.7% of households in Quebec reported that their total annual income was less than the low income cut-off (LICO), while 858,163 / 4,526,715 = 19.0% of households in Ontario reported that their total annual income was less than LICO. How does the user determine the coefficient of variation of the difference between these two estimates?

1) Using the QUEBEC and ONTARIO coefficient of variation tables in the same manner as described in Example 1 gives the CV of the estimate for households in Quebec as 2.8%, and the CV of the estimate for households in Ontario as 3.5%.

RESIDENTIAL TELEPHONE SERVICE SURVEY - NOVEMBER 2002
Approximate Sampling Variability Tables - Quebec

NUMERATOR OF PERCENTAGE ('000)	ESTIMATED PERCENTAGE 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	88.9	88.5	88.1	86.7	84.4	82.0	79.6	77.0	74.4	71.7	68.9	62.9	48.7	28.1
2	62.9	62.6	62.3	61.3	59.7	58.0	56.3	54.5	52.6	50.7	48.7	44.5	34.5	19.9
3	51.3	51.1	50.8	50.1	48.7	47.4	45.9	44.5	43.0	41.4	39.8	36.3	28.1	16.2
4	********	44.3	44.0	43.4	42.2	41.0	39.8	38.5	37.2	35.9	34.5	31.5	24.4	14.1
5	********	39.6	39.4	38.8	37.7	36.7	35.6	34.5	33.3	32.1	30.8	28.1	21.8	12.6
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200	********	********	********	********	6.0	5.8	5.6	5.4	5.3	5.1	4.9	4.4	3.4	2.0
250	********	********	********	********	5.3	5.2	5.0	4.9	4.7	4.5	4.4	4.0	3.1	1.8
300	********	********	********	********	4.9	4.7	4.6	4.4	4.3	4.1	4.0	3.6	2.8	1.6
350	********	********	********	********	********	4.4	4.3	4.1	4.0	3.8	3.7	3.4	2.6	1.5
400	********	********	********	********	********	4.1	4.0	3.9	3.7	3.6	3.4	3.1	2.4	1.4
450	********	********	********	********	********	3.9	3.8	3.6	3.5	3.4	3.2	3.0	2.3	1.3
500	********	********	********	********	********	********	3.6	3.4	3.3	3.2	3.1	2.8	2.2	1.3
750	********	********	********	********	********	********	********	**2.8**	2.7	2.6	2.5	2.3	1.8	1.0
1000	********	********	********	********	********	********	********	********	********	2.3	2.2	2.0	1.5	0.9
1500	********	********	********	********	********	********	********	********	********	********	********	1.6	1.3	0.7
2000	********	********	********	********	********	********	********	********	********	********	********	********	1.1	0.6

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - NOVEMBER 2002
Approximate Sampling Variability Tables - Ontario

NUMERATOR OF PERCENTAGE ('000)	ESTIMATED PERCENTAGE 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	105.6	105.1	104.6	103.0	100.2	97.4	94.5	91.5	88.4	85.2	81.8	74.7	57.9	33.4
2	74.7	74.3	74.0	72.8	70.9	68.9	66.8	64.7	62.5	60.2	57.9	52.8	40.9	23.6
3	61.0	60.7	60.4	59.5	57.9	56.2	54.6	52.8	51.0	49.2	47.2	43.1	33.4	19.3
.														
.														
.														
250	********	********	********	********	6.3	6.2	6.0	5.8	5.6	5.4	5.2	4.7	3.7	2.1
300	********	********	********	********	5.8	5.6	5.5	5.3	5.1	4.9	4.7	4.3	3.3	1.9
350	********	********	********	********	5.4	5.2	5.1	4.9	4.7	4.6	4.4	4.0	3.1	1.8
400	********	********	********	********	5.0	4.9	4.7	4.6	4.4	4.3	4.1	3.7	2.9	1.7
450	********	********	********	********	4.7	4.6	4.5	4.3	4.2	4.0	3.9	3.5	2.7	1.6
500	********	********	********	********	********	4.4	4.2	4.1	4.0	3.8	3.7	3.3	2.6	1.5
750	********	********	********	********	********	********	**3.5**	3.3	3.2	3.1	3.0	2.7	2.1	1.2
1000	********	********	********	********	********	********	********	2.9	2.8	2.7	2.6	2.4	1.8	1.1
1500	********	********	********	********	********	********	********	********	********	2.2	2.1	1.9	1.5	0.9
2000	********	********	********	********	********	********	********	********	********	********	********	1.7	1.3	0.7
3000	********	********	********	********	********	********	********	********	********	********	********	********	1.1	0.6
4000	********	********	********	********	********	********	********	********	********	********	********	********	********	0.5

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

2) Using Rule 3, the standard error of a difference $\left(\hat{d} = \hat{X}_1 - \hat{X}_2\right)$ is:

$$\sigma_{\hat{d}} = \sqrt{\left(\hat{X}_1\alpha_1\right)^2 + \left(\hat{X}_2\alpha_2\right)^2}$$

where $\hat{X}_1$ is estimate 1 (Quebec), $\hat{X}_2$ is estimate 2 (Ontario), and α_1 and α_2 are the coefficients of variation of $\hat{X}_1$ and $\hat{X}_2$ respectively.
That is, the standard error of the difference given
$\hat{d}$ = 0.257 - 0.190 = 0.067 is:

$$\begin{aligned}\sigma_{\hat{d}} &= \sqrt{[(0.257)(0.028)]^2 + [(0.190)(0.035)]^2} \\ &= \sqrt{(0.0000517) + (0.0000442)} \\ &= 0.0098\end{aligned}$$

3) The coefficient of variation of $\hat{d}$ is given by $\sigma_{\hat{d}} / \hat{d}$ = 0.0098 / 0.067 = 0.146.

4) So the approximate coefficient of variation of the difference between the estimates is 14.6%, which is releasable with no qualifications.

Example 4: Estimates of Ratios

Suppose that the user estimates that 796,352 households in Quebec reported that their total annual income was less than the low income cut-off (LICO), while 858,163 households in Ontario reported that their total annual income was less than LICO. The user is interested in comparing the estimate of Quebec households versus that of Ontario households in the form of a ratio. How does the user determine the coefficient of variation of this estimate?

1) First of all, this estimate is a ratio estimate, where the numerator of the estimate $\left(\hat{X}_1\right)$ is the number of households in Quebec which reported that their total annual income was less than LICO. The denominator of the estimate $\left(\hat{X}_2\right)$ is the number of households in Ontario which reported that their total annual income was less than LICO.

2) Refer to the coefficient of variation tables for QUEBEC and ONTARIO (see above).

3) The numerator of this ratio estimate is 796,352. The figure closest to it is 750,000. The coefficient of variation for this estimate is found by referring to the first non-asterisk entry on that row in the QUEBEC CV table, namely, 2.8%.

4) The denominator of this ratio estimate is 858,163. The figure closest to it is 750,000. The coefficient of variation for this estimate is found by referring to the first non-asterisk entry on that row in the ONTARIO CV table, namely, 3.5%.

5) So the approximate coefficient of variation of the ratio estimate is given by Rule 4, which is:

$$\alpha_{\hat{R}} = \sqrt{\alpha_1^{\,2} + \alpha_2^{\,2}}$$

where α_1 and α_2 are the coefficients of variation of $\hat{X}_1$ and $\hat{X}_2$ respectively.

That is:

$$\begin{aligned} \alpha_{\hat{R}} &= \sqrt{(0.028)^2 + (0.035)^2} \\ &= 0.045 \end{aligned}$$

The obtained ratio of Quebec versus Ontario for households whose total annual income is less than the LICO is 796,352 / 858,163 which is 0.93:1 (to be rounded according to the rounding guidelines in Section 9.1). The coefficient of variation of this estimate is 4.5%, which is releasable with no qualifications.

10.2 How to Use the Coefficient of Variation Tables to Obtain Confidence Limits

Although coefficients of variation are widely used, a more intuitively meaningful measure of sampling error is the confidence interval of an estimate. A confidence interval constitutes a statement on the level of confidence that the true value for the population lies within a specified range of values. For example a 95% confidence interval can be described as follows:

> If sampling of the population is repeated indefinitely, each sample leading to a new confidence interval for an estimate, then in 95% of the samples the interval will cover the true population value.
>
> Using the standard error of an estimate, confidence intervals for estimates may be obtained under the assumption that under repeated sampling of the population, the various estimates obtained for a population characteristic are normally distributed about the true population value. Under this assumption, the chances are about 68 out of 100 that the difference between a sample estimate and the true population value would be less than one standard error, about 95 out of 100 that the difference would be less than two standard errors, and about 99 out of 100 that the differences would be less than three standard errors. These different degrees of confidence are referred to as the confidence levels.
>
> Confidence intervals for an estimate, $\hat{X}$ are generally expressed as two numbers, one below the estimate and one above the estimate, as $(\hat{X} - k,\ \hat{X} + k)$ where k is determined depending upon the level of confidence desired and the sampling error of the estimate.
>
> Confidence intervals for an estimate can be calculated directly from the Approximate Sampling Variability Tables by first determining from the

appropriate table the coefficient of variation of the estimate $\hat{X}$, and then using the following formula to convert to a confidence interval $(CI_{\hat{x}})$:

$$CI_{\hat{x}} = \left(\hat{X} - t\hat{X}\alpha_{\hat{x}}, \hat{X} + t\hat{X}\alpha_{\hat{x}}\right)$$

where $\alpha_{\hat{X}}$ is the determined coefficient of variation of $\hat{X}$, and

t = 1 if a 68% confidence interval is desired;
t = 1.6 if a 90% confidence interval is desired;
t = 2 if a 95% confidence interval is desired;
t = 2.6 if a 99% confidence interval is desired.

Note: Release guidelines which apply to the estimate also apply to the confidence interval. For example, if the estimate is not releasable, then the confidence interval is not releasable either.

10.2.1 Example of Using the Coefficient of Variation Tables to Obtain Confidence Limits

A 95% confidence interval for the estimated proportion of households which did not have telephone service for their residence during the reference period because they could not afford telephone service (from Example 2, Section 10.1.1) would be calculated as follows:

$\hat{X}$ = 56.7% (or expressed as a proportion 0.567)

t = 2

$\alpha_{\hat{X}}$ = 5.6% (0.056 expressed as a proportion) is the coefficient of variation of this estimate as determined from the tables.

$CI_{\hat{x}}$ = {0.567 - (2) (0.567) (0.056), 0.567 + (2) (0.567) (0.056)}
$CI_{\hat{x}}$ = {0.567 - 0.064, 0.567 + 0.064}
$CI_{\hat{x}}$ = {0.503, 0.631}

With 95% confidence it can be said that between 50.3% and 63.1% of households which did not have telephone service for their residence during the reference period reported that they could not afford telephone service.

10.3 How to Use the Coefficient of Variation Tables to Do a T-test

Standard errors may also be used to perform hypothesis testing, a procedure for distinguishing between population parameters using sample estimates. The sample estimates can be numbers, averages, percentages, ratios, etc. Tests may be performed at various levels of significance, where a level of significance is the probability of concluding that the characteristics are different when, in fact, they are identical.

Let $\hat{X}_1$ and $\hat{X}_2$ be sample estimates for two characteristics of interest. Let the standard error on the difference $\hat{X}_1$ - $\hat{X}_2$ be $\sigma_{\hat{d}}$.

If $t = \dfrac{\hat{X}_1 - \hat{X}_2}{\sigma_{\hat{d}}}$

is between -2 and 2, then no conclusion about the difference between the characteristics is justified at the 5% level of significance. If however, this ratio is smaller than -2 or larger than +2, the observed difference is significant at the 0.05 level. That is to say that the difference between the estimates is significant.

10.3.1 Example of Using the Coefficient of Variation Tables to Do a T-test

Let us suppose that the user wishes to test, at 5% level of significance, the hypothesis that there is no difference between the proportion of households in Quebec which reported that their total annual income was less than the low income cut-off (LICO), and the proportion of households in Ontario which reported that their total annual income was less than LICO. From Example 3, Section 10.1.1, the standard error of the difference between these two estimates was found to be 0.0098. Hence,

$$t = \frac{\hat{X}_1 - \hat{X}_2}{\sigma_{\hat{d}}} = \frac{0.257 - 0.190}{0.0098} = \frac{0.067}{0.0098} = 6.84$$

Since t = 6.84 is greater than 2, it must be concluded that there is a significant difference between the two estimates at the 0.05 level of significance.

10.4 Coefficients of Variation for Quantitative Estimates

For quantitative estimates, special tables would have to be produced to determine their sampling error. Since all of the variables for the Residential Telephone Service Survey are primarily categorical in nature, this has not been done.

As a general rule, however, the coefficient of variation of a quantitative total will be larger than the coefficient of variation of the corresponding category estimate (i.e., the estimate of the number of persons contributing to the quantitative estimate). If the corresponding category estimate is not releasable, the quantitative estimate will not be either. For example, the coefficient of variation of the total number of weeks absent from work would be greater than the coefficient of variation of the corresponding proportion of paid workers with an absence. Hence, if the coefficient of variation of the proportion is not releasable, then the coefficient of variation of the corresponding quantitative estimate will also not be releasable.

Coefficients of variation of such estimates can be derived as required for a specific estimate using a technique known as pseudo replication. This involves dividing the records on the microdata files into subgroups (or replicates) and determining the variation in the estimate from replicate to replicate. Users wishing to derive coefficients of variation for quantitative estimates may contact Statistics Canada for advice on the allocation of records to appropriate replicates and the formulae to be used in these calculations.

10.5 Coefficient of Variation Tables

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Newfoundland and Labrador

NUMERATOR OF PERCENTAGE	**ESTIMATED PERCENTAGE**													
('000)	0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	********	39.9	39.7	39.1	38.0	37.0	35.9	34.7	33.5	32.3	31.1	28.3	22.0	12.7
2	********	********	28.1	27.6	26.9	26.1	25.4	24.6	23.7	22.9	22.0	20.0	15.5	9.0
3	********	********	22.9	22.6	22.0	21.3	20.7	20.0	19.4	18.7	17.9	16.4	12.7	7.3
4	********	********	********	19.5	19.0	18.5	17.9	17.4	16.8	16.2	15.5	14.2	11.0	6.3
5	********	********	********	17.5	17.0	16.5	16.0	15.5	15.0	14.5	13.9	12.7	9.8	5.7
6	********	********	********	16.0	15.5	15.1	14.6	14.2	13.7	13.2	12.7	11.6	9.0	5.2
7	********	********	********	14.8	14.4	14.0	13.6	13.1	12.7	12.2	11.7	10.7	8.3	4.8
8	********	********	********	13.8	13.4	13.1	12.7	12.3	11.9	11.4	11.0	10.0	7.8	4.5
9	********	********	********	13.0	12.7	12.3	12.0	11.6	11.2	10.8	10.4	9.4	7.3	4.2
10	********	********	********	********	12.0	11.7	11.3	11.0	10.6	10.2	9.8	9.0	6.9	4.0
11	********	********	********	********	11.5	11.1	10.8	10.5	10.1	9.7	9.4	8.5	6.6	3.8
12	********	********	********	********	11.0	10.7	10.4	10.0	9.7	9.3	9.0	8.2	6.3	3.7
13	********	********	********	********	10.5	10.3	9.9	9.6	9.3	9.0	8.6	7.9	6.1	3.5
14	********	********	********	********	10.2	9.9	9.6	9.3	9.0	8.6	8.3	7.6	5.9	3.4
15	********	********	********	********	9.8	9.5	9.3	9.0	8.7	8.3	8.0	7.3	5.7	3.3
16	********	********	********	********	9.5	9.2	9.0	8.7	8.4	8.1	7.8	7.1	5.5	3.2
17	********	********	********	********	9.2	9.0	8.7	8.4	8.1	7.8	7.5	6.9	5.3	3.1
18	********	********	********	********	9.0	8.7	8.5	8.2	7.9	7.6	7.3	6.7	5.2	3.0
19	********	********	********	********	8.7	8.5	8.2	8.0	7.7	7.4	7.1	6.5	5.0	2.9
20	********	********	********	********	********	8.3	8.0	7.8	7.5	7.2	6.9	6.3	4.9	2.8
21	********	********	********	********	********	8.1	7.8	7.6	7.3	7.1	6.8	6.2	4.8	2.8
22	********	********	********	********	********	7.9	7.6	7.4	7.2	6.9	6.6	6.0	4.7	2.7
23	********	********	********	********	********	7.7	7.5	7.2	7.0	6.7	6.5	5.9	4.6	2.6
24	********	********	********	********	********	7.5	7.3	7.1	6.8	6.6	6.3	5.8	4.5	2.6
25	********	********	********	********	********	7.4	7.2	6.9	6.7	6.5	6.2	5.7	4.4	2.5
30	********	********	********	********	********	********	6.5	6.3	6.1	5.9	5.7	5.2	4.0	2.3
35	********	********	********	********	********	********	6.1	5.9	5.7	5.5	5.2	4.8	3.7	2.1
40	********	********	********	********	********	********	********	5.5	5.3	5.1	4.9	4.5	3.5	2.0
45	********	********	********	********	********	********	********	5.2	5.0	4.8	4.6	4.2	3.3	1.9
50	********	********	********	********	********	********	********	********	4.7	4.6	4.4	4.0	3.1	1.8
55	********	********	********	********	********	********	********	********	4.5	4.4	4.2	3.8	3.0	1.7
60	********	********	********	********	********	********	********	********	********	4.2	4.0	3.7	2.8	1.6
65	********	********	********	********	********	********	********	********	********	4.0	3.9	3.5	2.7	1.6
70	********	********	********	********	********	********	********	********	********	********	3.7	3.4	2.6	1.5
75	********	********	********	********	********	********	********	********	********	********	3.6	3.3	2.5	1.5
80	********	********	********	********	********	********	********	********	********	********	********	3.2	2.5	1.4
85	********	********	********	********	********	********	********	********	********	********	********	3.1	2.4	1.4
90	********	********	********	********	********	********	********	********	********	********	********	3.0	2.3	1.3
95	********	********	********	********	********	********	********	********	********	********	********	2.9	2.3	1.3
100	********	********	********	********	********	********	********	********	********	********	********	********	2.2	1.3
125	********	********	********	********	********	********	********	********	********	********	********	********	2.0	1.1
150	********	********	********	********	********	********	********	********	********	********	********	********	********	1.0

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Prince Edward Island

NUMERATOR OF PERCENTAGE ('000)	**ESTIMATED PERCENTAGE** 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	***	***	25.3	25.0	24.3	23.6	22.9	22.2	21.4	20.6	19.8	18.1	14.0	8.1
2	***	***	***	17.6	17.2	16.7	16.2	15.7	15.1	14.6	14.0	12.8	9.9	5.7
3	***	***	***	***	14.0	13.6	13.2	12.8	12.4	11.9	11.5	10.5	8.1	4.7
4	***	***	***	***	12.1	11.8	11.5	11.1	10.7	10.3	9.9	9.1	7.0	4.0
5	***	***	***	***	10.9	10.6	10.2	9.9	9.6	9.2	8.9	8.1	6.3	3.6
6	***	***	***	***	***	9.6	9.3	9.1	8.7	8.4	8.1	7.4	5.7	3.3
7	***	***	***	***	***	8.9	8.7	8.4	8.1	7.8	7.5	6.8	5.3	3.1
8	***	***	***	***	***	8.3	8.1	7.8	7.6	7.3	7.0	6.4	5.0	2.9
9	***	***	***	***	***	***	7.6	7.4	7.1	6.9	6.6	6.0	4.7	2.7
10	***	***	***	***	***	***	7.2	7.0	6.8	6.5	6.3	5.7	4.4	2.6
11	***	***	***	***	***	***	***	6.7	6.5	6.2	6.0	5.5	4.2	2.4
12	***	***	***	***	***	***	***	6.4	6.2	6.0	5.7	5.2	4.0	2.3
13	***	***	***	***	***	***	***	6.2	5.9	5.7	5.5	5.0	3.9	2.2
14	***	***	***	***	***	***	***	***	5.7	5.5	5.3	4.8	3.7	2.2
15	***	***	***	***	***	***	***	***	5.5	5.3	5.1	4.7	3.6	2.1
16	***	***	***	***	***	***	***	***	5.4	5.2	5.0	4.5	3.5	2.0
17	***	***	***	***	***	***	***	***	***	5.0	4.8	4.4	3.4	2.0
18	***	***	***	***	***	***	***	***	***	4.9	4.7	4.3	3.3	1.9
19	***	***	***	***	***	***	***	***	***	***	4.6	4.2	3.2	1.9
20	***	***	***	***	***	***	***	***	***	***	4.4	4.0	3.1	1.8
21	***	***	***	***	***	***	***	***	***	***	4.3	4.0	3.1	1.8
22	***	***	***	***	***	***	***	***	***	***	***	3.9	3.0	1.7
23	***	***	***	***	***	***	***	***	***	***	***	3.8	2.9	1.7
24	***	***	***	***	***	***	***	***	***	***	***	3.7	2.9	1.7
25	***	***	***	***	***	***	***	***	***	***	***	3.6	2.8	1.6
30	***	***	***	***	***	***	***	***	***	***	***	***	2.6	1.5
35	***	***	***	***	***	***	***	***	***	***	***	***	2.4	1.4
40	***	***	***	***	***	***	***	***	***	***	***	***	***	1.3
45	***	***	***	***	***	***	***	***	***	***	***	***	***	1.2

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Nova Scotia

NUMERATOR OF PERCENTAGE ('000)	ESTIMATED PERCENTAGE 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	********	52.4	52.2	51.4	50.0	48.6	47.1	45.6	44.1	42.5	40.8	37.3	28.9	16.7
2	********	37.1	36.9	36.3	35.3	34.4	33.3	32.3	31.2	30.0	28.9	26.3	20.4	11.8
3	********	30.3	30.1	29.7	28.9	28.0	27.2	26.3	25.5	24.5	23.6	21.5	16.7	9.6
4	********	********	26.1	25.7	25.0	24.3	23.6	22.8	22.0	21.2	20.4	18.6	14.4	8.3
5	********	********	23.3	23.0	22.4	21.7	21.1	20.4	19.7	19.0	18.3	16.7	12.9	7.5
6	********	********	21.3	21.0	20.4	19.8	19.2	18.6	18.0	17.3	16.7	15.2	11.8	6.8
7	********	********	19.7	19.4	18.9	18.4	17.8	17.2	16.7	16.1	15.4	14.1	10.9	6.3
8	********	********	********	18.2	17.7	17.2	16.7	16.1	15.6	15.0	14.4	13.2	10.2	5.9
9	********	********	********	17.1	16.7	16.2	15.7	15.2	14.7	14.2	13.6	12.4	9.6	5.6
10	********	********	********	16.2	15.8	15.4	14.9	14.4	13.9	13.4	12.9	11.8	9.1	5.3
11	********	********	********	15.5	15.1	14.6	14.2	13.8	13.3	12.8	12.3	11.2	8.7	5.0
12	********	********	********	14.8	14.4	14.0	13.6	13.2	12.7	12.3	11.8	10.8	8.3	4.8
13	********	********	********	14.2	13.9	13.5	13.1	12.7	12.2	11.8	11.3	10.3	8.0	4.6
14	********	********	********	13.7	13.4	13.0	12.6	12.2	11.8	11.4	10.9	10.0	7.7	4.5
15	********	********	********	13.3	12.9	12.5	12.2	11.8	11.4	11.0	10.5	9.6	7.5	4.3
16	********	********	********	12.8	12.5	12.1	11.8	11.4	11.0	10.6	10.2	9.3	7.2	4.2
17	********	********	********	12.5	12.1	11.8	11.4	11.1	10.7	10.3	9.9	9.0	7.0	4.0
18	********	********	********	12.1	11.8	11.5	11.1	10.8	10.4	10.0	9.6	8.8	6.8	3.9
19	********	********	********	********	11.5	11.1	10.8	10.5	10.1	9.7	9.4	8.5	6.6	3.8
20	********	********	********	********	11.2	10.9	10.5	10.2	9.9	9.5	9.1	8.3	6.5	3.7
21	********	********	********	********	10.9	10.6	10.3	10.0	9.6	9.3	8.9	8.1	6.3	3.6
22	********	********	********	********	10.7	10.4	10.0	9.7	9.4	9.1	8.7	7.9	6.2	3.6
23	********	********	********	********	10.4	10.1	9.8	9.5	9.2	8.9	8.5	7.8	6.0	3.5
24	********	********	********	********	10.2	9.9	9.6	9.3	9.0	8.7	8.3	7.6	5.9	3.4
25	********	********	********	********	10.0	9.7	9.4	9.1	8.8	8.5	8.2	7.5	5.8	3.3
30	********	********	********	********	9.1	8.9	8.6	8.3	8.0	7.8	7.5	6.8	5.3	3.0
35	********	********	********	********	8.5	8.2	8.0	7.7	7.5	7.2	6.9	6.3	4.9	2.8
40	********	********	********	********	********	7.7	7.5	7.2	7.0	6.7	6.5	5.9	4.6	2.6
45	********	********	********	********	********	7.2	7.0	6.8	6.6	6.3	6.1	5.6	4.3	2.5
50	********	********	********	********	********	6.9	6.7	6.5	6.2	6.0	5.8	5.3	4.1	2.4
55	********	********	********	********	********	6.6	6.4	6.2	5.9	5.7	5.5	5.0	3.9	2.2
60	********	********	********	********	********	********	6.1	5.9	5.7	5.5	5.3	4.8	3.7	2.2
65	********	********	********	********	********	********	5.8	5.7	5.5	5.3	5.1	4.6	3.6	2.1
70	********	********	********	********	********	********	5.6	5.5	5.3	5.1	4.9	4.5	3.4	2.0
75	********	********	********	********	********	********	********	5.3	5.1	4.9	4.7	4.3	3.3	1.9
80	********	********	********	********	********	********	********	5.1	4.9	4.7	4.6	4.2	3.2	1.9
85	********	********	********	********	********	********	********	4.9	4.8	4.6	4.4	4.0	3.1	1.8
90	********	********	********	********	********	********	********	4.8	4.6	4.5	4.3	3.9	3.0	1.8
95	********	********	********	********	********	********	********	********	4.5	4.4	4.2	3.8	3.0	1.7
100	********	********	********	********	********	********	********	********	4.4	4.2	4.1	3.7	2.9	1.7
125	********	********	********	********	********	********	********	********	********	3.8	3.7	3.3	2.6	1.5
150	********	********	********	********	********	********	********	********	********	********	********	3.0	2.4	1.4
200	********	********	********	********	********	********	********	********	********	********	********	********	2.0	1.2
250	********	********	********	********	********	********	********	********	********	********	********	********	1.8	1.1
300	********	********	********	********	********	********	********	********	********	********	********	********	********	1.0

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - New Brunswick

NUMERATOR OF PERCENTAGE ('000)	**ESTIMATED PERCENTAGE** 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	********	47.9	47.6	46.9	45.6	44.4	43.0	41.7	40.3	38.8	37.3	34.0	26.4	15.2
2	********	33.8	33.7	33.2	32.3	31.4	30.4	29.5	28.5	27.4	26.4	24.1	18.6	10.8
3	********	********	27.5	27.1	26.4	25.6	24.8	24.1	23.2	22.4	21.5	19.6	15.2	8.8
4	********	********	23.8	23.4	22.8	22.2	21.5	20.8	20.1	19.4	18.6	17.0	13.2	7.6
5	********	********	21.3	21.0	20.4	19.8	19.2	18.6	18.0	17.3	16.7	15.2	11.8	6.8
6	********	********	********	19.1	18.6	18.1	17.6	17.0	16.4	15.8	15.2	13.9	10.8	6.2
7	********	********	********	17.7	17.3	16.8	16.3	15.7	15.2	14.7	14.1	12.9	10.0	5.8
8	********	********	********	16.6	16.1	15.7	15.2	14.7	14.2	13.7	13.2	12.0	9.3	5.4
9	********	********	********	15.6	15.2	14.8	14.3	13.9	13.4	12.9	12.4	11.3	8.8	5.1
10	********	********	********	14.8	14.4	14.0	13.6	13.2	12.7	12.3	11.8	10.8	8.3	4.8
11	********	********	********	14.1	13.8	13.4	13.0	12.6	12.1	11.7	11.2	10.3	7.9	4.6
12	********	********	********	13.5	13.2	12.8	12.4	12.0	11.6	11.2	10.8	9.8	7.6	4.4
13	********	********	********	13.0	12.7	12.3	11.9	11.6	11.2	10.8	10.3	9.4	7.3	4.2
14	********	********	********	12.5	12.2	11.9	11.5	11.1	10.8	10.4	10.0	9.1	7.0	4.1
15	********	********	********	********	11.8	11.5	11.1	10.8	10.4	10.0	9.6	8.8	6.8	3.9
16	********	********	********	********	11.4	11.1	10.8	10.4	10.1	9.7	9.3	8.5	6.6	3.8
17	********	********	********	********	11.1	10.8	10.4	10.1	9.8	9.4	9.0	8.3	6.4	3.7
18	********	********	********	********	10.8	10.5	10.1	9.8	9.5	9.1	8.8	8.0	6.2	3.6
19	********	********	********	********	10.5	10.2	9.9	9.6	9.2	8.9	8.5	7.8	6.0	3.5
20	********	********	********	********	10.2	9.9	9.6	9.3	9.0	8.7	8.3	7.6	5.9	3.4
21	********	********	********	********	10.0	9.7	9.4	9.1	8.8	8.5	8.1	7.4	5.8	3.3
22	********	********	********	********	9.7	9.5	9.2	8.9	8.6	8.3	7.9	7.3	5.6	3.2
23	********	********	********	********	9.5	9.2	9.0	8.7	8.4	8.1	7.8	7.1	5.5	3.2
24	********	********	********	********	9.3	9.1	8.8	8.5	8.2	7.9	7.6	6.9	5.4	3.1
25	********	********	********	********	9.1	8.9	8.6	8.3	8.1	7.8	7.5	6.8	5.3	3.0
30	********	********	********	********	********	8.1	7.9	7.6	7.3	7.1	6.8	6.2	4.8	2.8
35	********	********	********	********	********	7.5	7.3	7.0	6.8	6.6	6.3	5.8	4.5	2.6
40	********	********	********	********	********	7.0	6.8	6.6	6.4	6.1	5.9	5.4	4.2	2.4
45	********	********	********	********	********	********	6.4	6.2	6.0	5.8	5.6	5.1	3.9	2.3
50	********	********	********	********	********	********	6.1	5.9	5.7	5.5	5.3	4.8	3.7	2.2
55	********	********	********	********	********	********	5.8	5.6	5.4	5.2	5.0	4.6	3.6	2.1
60	********	********	********	********	********	********	********	5.4	5.2	5.0	4.8	4.4	3.4	2.0
65	********	********	********	********	********	********	********	5.2	5.0	4.8	4.6	4.2	3.3	1.9
70	********	********	********	********	********	********	********	5.0	4.8	4.6	4.5	4.1	3.1	1.8
75	********	********	********	********	********	********	********	********	4.6	4.5	4.3	3.9	3.0	1.8
80	********	********	********	********	********	********	********	********	4.5	4.3	4.2	3.8	2.9	1.7
85	********	********	********	********	********	********	********	********	4.4	4.2	4.0	3.7	2.9	1.7
90	********	********	********	********	********	********	********	********	********	4.1	3.9	3.6	2.8	1.6
95	********	********	********	********	********	********	********	********	********	4.0	3.8	3.5	2.7	1.6
100	********	********	********	********	********	********	********	********	********	3.9	3.7	3.4	2.6	1.5
125	********	********	********	********	********	********	********	********	********	********	********	3.0	2.4	1.4
150	********	********	********	********	********	********	********	********	********	********	********	********	2.2	1.2
200	********	********	********	********	********	********	********	********	********	********	********	********	1.9	1.1
250	********	********	********	********	********	********	********	********	********	********	********	********	********	1.0

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Quebec

NUMERATOR OF PERCENTAGE ('000)	**ESTIMATED PERCENTAGE** 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	95.9	95.4	94.9	93.5	91.0	88.4	85.8	83.1	80.2	77.3	74.3	67.8	52.5	30.3
2	67.8	67.5	67.1	66.1	64.3	62.5	60.7	58.7	56.7	54.7	52.5	48.0	37.1	21.4
3	55.3	55.1	54.8	54.0	52.5	51.0	49.5	48.0	46.3	44.6	42.9	39.2	30.3	17.5
4	********	47.7	47.5	46.7	45.5	44.2	42.9	41.5	40.1	38.7	37.1	33.9	26.3	15.2
5	********	42.7	42.5	41.8	40.7	39.5	38.4	37.1	35.9	34.6	33.2	30.3	23.5	13.6
6	********	39.0	38.8	38.2	37.1	36.1	35.0	33.9	32.8	31.6	30.3	27.7	21.4	12.4
7	********	36.1	35.9	35.3	34.4	33.4	32.4	31.4	30.3	29.2	28.1	25.6	19.9	11.5
8	********	33.7	33.6	33.0	32.2	31.3	30.3	29.4	28.4	27.3	26.3	24.0	18.6	10.7
9	********	31.8	31.6	31.2	30.3	29.5	28.6	27.7	26.7	25.8	24.8	22.6	17.5	10.1
10	********	30.2	30.0	29.6	28.8	28.0	27.1	26.3	25.4	24.5	23.5	21.4	16.6	9.6
11	********	28.8	28.6	28.2	27.4	26.7	25.9	25.0	24.2	23.3	22.4	20.4	15.8	9.1
12	********	27.5	27.4	27.0	26.3	25.5	24.8	24.0	23.2	22.3	21.4	19.6	15.2	8.8
13	********	26.5	26.3	25.9	25.2	24.5	23.8	23.0	22.3	21.4	20.6	18.8	14.6	8.4
14	********	25.5	25.4	25.0	24.3	23.6	22.9	22.2	21.4	20.7	19.9	18.1	14.0	8.1
15	********	24.6	24.5	24.1	23.5	22.8	22.1	21.4	20.7	20.0	19.2	17.5	13.6	7.8
16	********	23.9	23.7	23.4	22.7	22.1	21.4	20.8	20.1	19.3	18.6	17.0	13.1	7.6
17	********	23.1	23.0	22.7	22.1	21.4	20.8	20.1	19.5	18.8	18.0	16.4	12.7	7.4
18	********	22.5	22.4	22.0	21.4	20.8	20.2	19.6	18.9	18.2	17.5	16.0	12.4	7.1
19	********	21.9	21.8	21.4	20.9	20.3	19.7	19.1	18.4	17.7	17.0	15.6	12.1	7.0
20	********	21.3	21.2	20.9	20.3	19.8	19.2	18.6	17.9	17.3	16.6	15.2	11.7	6.8
21	********	20.8	20.7	20.4	19.9	19.3	18.7	18.1	17.5	16.9	16.2	14.8	11.5	6.6
22	********	20.3	20.2	19.9	19.4	18.9	18.3	17.7	17.1	16.5	15.8	14.5	11.2	6.5
23	********	19.9	19.8	19.5	19.0	18.4	17.9	17.3	16.7	16.1	15.5	14.1	11.0	6.3
24	********	19.5	19.4	19.1	18.6	18.0	17.5	17.0	16.4	15.8	15.2	13.8	10.7	6.2
25	********	19.1	19.0	18.7	18.2	17.7	17.2	16.6	16.0	15.5	14.9	13.6	10.5	6.1
30	********	17.4	17.3	17.1	16.6	16.1	15.7	15.2	14.6	14.1	13.6	12.4	9.6	5.5
35	****************		16.0	15.8	15.4	14.9	14.5	14.0	13.6	13.1	12.6	11.5	8.9	5.1
40	****************		15.0	14.8	14.4	14.0	13.6	13.1	12.7	12.2	11.7	10.7	8.3	4.8
45	****************		14.2	13.9	13.6	13.2	12.8	12.4	12.0	11.5	11.1	10.1	7.8	4.5
50	****************		13.4	13.2	12.9	12.5	12.1	11.7	11.3	10.9	10.5	9.6	7.4	4.3
55	****************		12.8	12.6	12.3	11.9	11.6	11.2	10.8	10.4	10.0	9.1	7.1	4.1
60	****************		12.3	12.1	11.7	11.4	11.1	10.7	10.4	10.0	9.6	8.8	6.8	3.9
65	************************			11.6	11.3	11.0	10.6	10.3	10.0	9.6	9.2	8.4	6.5	3.8
70	************************			11.2	10.9	10.6	10.3	9.9	9.6	9.2	8.9	8.1	6.3	3.6
75	************************			10.8	10.5	10.2	9.9	9.6	9.3	8.9	8.6	7.8	6.1	3.5
80	************************			10.5	10.2	9.9	9.6	9.3	9.0	8.6	8.3	7.6	5.9	3.4
85	************************			10.1	9.9	9.6	9.3	9.0	8.7	8.4	8.1	7.4	5.7	3.3
90	************************			9.9	9.6	9.3	9.0	8.8	8.5	8.2	7.8	7.1	5.5	3.2
95	************************			9.6	9.3	9.1	8.8	8.5	8.2	7.9	7.6	7.0	5.4	3.1
100	************************			9.3	9.1	8.8	8.6	8.3	8.0	7.7	7.4	6.8	5.3	3.0
125	************************			8.4	8.1	7.9	7.7	7.4	7.2	6.9	6.6	6.1	4.7	2.7
150	************************			7.6	7.4	7.2	7.0	6.8	6.6	6.3	6.1	5.5	4.3	2.5
200	********************************				6.4	6.3	6.1	5.9	5.7	5.5	5.3	4.8	3.7	2.1
250	********************************				5.8	5.6	5.4	5.3	5.1	4.9	4.7	4.3	3.3	1.9
300	********************************				5.3	5.1	5.0	4.8	4.6	4.5	4.3	3.9	3.0	1.8
350	**					4.7	4.6	4.4	4.3	4.1	4.0	3.6	2.8	1.6
400	**					4.4	4.3	4.2	4.0	3.9	3.7	3.4	2.6	1.5
450	**					4.2	4.0	3.9	3.8	3.6	3.5	3.2	2.5	1.4
500	**						3.8	3.7	3.6	3.5	3.3	3.0	2.3	1.4
750	**							3.0	2.9	2.8	2.7	2.5	1.9	1.1
1000	**									2.4	2.3	2.1	1.7	1.0
1500	**											1.8	1.4	0.8
2000	**												1.2	0.7

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Ontario

NUMERATOR OF PERCENTAGE	**ESTIMATED PERCENTAGE**													
('000)	0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	80.3	79.9	79.5	78.3	76.2	74.1	71.9	69.6	67.2	64.8	62.2	56.8	44.0	25.4
2	56.8	56.5	56.2	55.4	53.9	52.4	50.8	49.2	47.5	45.8	44.0	40.2	31.1	18.0
3	46.4	46.1	45.9	45.2	44.0	42.8	41.5	40.2	38.8	37.4	35.9	32.8	25.4	14.7
4	40.1	40.0	39.8	39.1	38.1	37.0	35.9	34.8	33.6	32.4	31.1	28.4	22.0	12.7
5	********	35.7	35.6	35.0	34.1	33.1	32.1	31.1	30.1	29.0	27.8	25.4	19.7	11.4
6	********	32.6	32.5	32.0	31.1	30.2	29.3	28.4	27.4	26.4	25.4	23.2	18.0	10.4
7	********	30.2	30.1	29.6	28.8	28.0	27.2	26.3	25.4	24.5	23.5	21.5	16.6	9.6
8	********	28.3	28.1	27.7	26.9	26.2	25.4	24.6	23.8	22.9	22.0	20.1	15.6	9.0
9	********	26.6	26.5	26.1	25.4	24.7	24.0	23.2	22.4	21.6	20.7	18.9	14.7	8.5
10	********	25.3	25.1	24.8	24.1	23.4	22.7	22.0	21.3	20.5	19.7	18.0	13.9	8.0
11	********	24.1	24.0	23.6	23.0	22.3	21.7	21.0	20.3	19.5	18.8	17.1	13.3	7.7
12	********	23.1	23.0	22.6	22.0	21.4	20.7	20.1	19.4	18.7	18.0	16.4	12.7	7.3
13	********	22.2	22.1	21.7	21.1	20.5	19.9	19.3	18.6	18.0	17.3	15.8	12.2	7.0
14	********	21.4	21.3	20.9	20.4	19.8	19.2	18.6	18.0	17.3	16.6	15.2	11.8	6.8
15	********	20.6	20.5	20.2	19.7	19.1	18.6	18.0	17.4	16.7	16.1	14.7	11.4	6.6
16	********	20.0	19.9	19.6	19.1	18.5	18.0	17.4	16.8	16.2	15.6	14.2	11.0	6.4
17	********	19.4	19.3	19.0	18.5	18.0	17.4	16.9	16.3	15.7	15.1	13.8	10.7	6.2
18	********	18.8	18.7	18.5	18.0	17.5	16.9	16.4	15.8	15.3	14.7	13.4	10.4	6.0
19	********	18.3	18.2	18.0	17.5	17.0	16.5	16.0	15.4	14.9	14.3	13.0	10.1	5.8
20	********	17.9	17.8	17.5	17.0	16.6	16.1	15.6	15.0	14.5	13.9	12.7	9.8	5.7
21	********	17.4	17.4	17.1	16.6	16.2	15.7	15.2	14.7	14.1	13.6	12.4	9.6	5.5
22	********	17.0	17.0	16.7	16.2	15.8	15.3	14.8	14.3	13.8	13.3	12.1	9.4	5.4
23	********	16.7	16.6	16.3	15.9	15.4	15.0	14.5	14.0	13.5	13.0	11.8	9.2	5.3
24	********	16.3	16.2	16.0	15.6	15.1	14.7	14.2	13.7	13.2	12.7	11.6	9.0	5.2
25	********	16.0	15.9	15.7	15.2	14.8	14.4	13.9	13.4	13.0	12.4	11.4	8.8	5.1
30	********	14.6	14.5	14.3	13.9	13.5	13.1	12.7	12.3	11.8	11.4	10.4	8.0	4.6
35	********	13.5	13.4	13.2	12.9	12.5	12.1	11.8	11.4	10.9	10.5	9.6	7.4	4.3
40	********	12.6	12.6	12.4	12.1	11.7	11.4	11.0	10.6	10.2	9.8	9.0	7.0	4.0
45	********	11.9	11.9	11.7	11.4	11.0	10.7	10.4	10.0	9.7	9.3	8.5	6.6	3.8
50	********	********	11.2	11.1	10.8	10.5	10.2	9.8	9.5	9.2	8.8	8.0	6.2	3.6
55	********	********	10.7	10.6	10.3	10.0	9.7	9.4	9.1	8.7	8.4	7.7	5.9	3.4
60	********	********	10.3	10.1	9.8	9.6	9.3	9.0	8.7	8.4	8.0	7.3	5.7	3.3
65	********	********	9.9	9.7	9.5	9.2	8.9	8.6	8.3	8.0	7.7	7.0	5.5	3.2
70	********	********	9.5	9.4	9.1	8.9	8.6	8.3	8.0	7.7	7.4	6.8	5.3	3.0
75	********	********	9.2	9.0	8.8	8.6	8.3	8.0	7.8	7.5	7.2	6.6	5.1	2.9
80	********	********	8.9	8.8	8.5	8.3	8.0	7.8	7.5	7.2	7.0	6.4	4.9	2.8
85	********	********	8.6	8.5	8.3	8.0	7.8	7.5	7.3	7.0	6.7	6.2	4.8	2.8
90	********	********	8.4	8.3	8.0	7.8	7.6	7.3	7.1	6.8	6.6	6.0	4.6	2.7
95	********	********	********	8.0	7.8	7.6	7.4	7.1	6.9	6.6	6.4	5.8	4.5	2.6
100	********	********	********	7.8	7.6	7.4	7.2	7.0	6.7	6.5	6.2	5.7	4.4	2.5
125	********	********	********	7.0	6.8	6.6	6.4	6.2	6.0	5.8	5.6	5.1	3.9	2.3
150	********	********	********	6.4	6.2	6.0	5.9	5.7	5.5	5.3	5.1	4.6	3.6	2.1
200	********	********	********	5.5	5.4	5.2	5.1	4.9	4.8	4.6	4.4	4.0	3.1	1.8
250	********	********	********	********	4.8	4.7	4.5	4.4	4.3	4.1	3.9	3.6	2.8	1.6
300	********	********	********	********	4.4	4.3	4.1	4.0	3.9	3.7	3.6	3.3	2.5	1.5
350	********	********	********	********	4.1	4.0	3.8	3.7	3.6	3.5	3.3	3.0	2.4	1.4
400	********	********	********	********	3.8	3.7	3.6	3.5	3.4	3.2	3.1	2.8	2.2	1.3
450	********	********	********	********	3.6	3.5	3.4	3.3	3.2	3.1	2.9	2.7	2.1	1.2
500	********	********	********	********	********	3.3	3.2	3.1	3.0	2.9	2.8	2.5	2.0	1.1
750	********	********	********	********	********	********	2.6	2.5	2.5	2.4	2.3	2.1	1.6	0.9
1000	********	********	********	********	********	********	********	2.2	2.1	2.0	2.0	1.8	1.4	0.8
1500	********	********	********	********	********	********	********	********	********	1.7	1.6	1.5	1.1	0.7
2000	********	********	********	********	********	********	********	********	********	********	********	1.3	1.0	0.6
3000	********	********	********	********	********	********	********	********	********	********	********	********	0.8	0.5
4000	********	********	********	********	********	********	********	********	********	********	********	********	********	0.4

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Manitoba

NUMERATOR OF PERCENTAGE ('000)	**ESTIMATED PERCENTAGE** 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	********	52.3	52.0	51.2	49.9	48.5	47.0	45.5	44.0	42.4	40.7	37.2	28.8	16.6
2	********	37.0	36.8	36.2	35.3	34.3	33.2	32.2	31.1	30.0	28.8	26.3	20.4	11.8
3	********	30.2	30.0	29.6	28.8	28.0	27.1	26.3	25.4	24.5	23.5	21.5	16.6	9.6
4	********	26.2	26.0	25.6	24.9	24.2	23.5	22.8	22.0	21.2	20.4	18.6	14.4	8.3
5	****************		23.3	22.9	22.3	21.7	21.0	20.4	19.7	19.0	18.2	16.6	12.9	7.4
6	****************		21.2	20.9	20.4	19.8	19.2	18.6	18.0	17.3	16.6	15.2	11.8	6.8
7	****************		19.7	19.4	18.8	18.3	17.8	17.2	16.6	16.0	15.4	14.0	10.9	6.3
8	****************		18.4	18.1	17.6	17.1	16.6	16.1	15.5	15.0	14.4	13.1	10.2	5.9
9	************************			17.1	16.6	16.2	15.7	15.2	14.7	14.1	13.6	12.4	9.6	5.5
10	************************			16.2	15.8	15.3	14.9	14.4	13.9	13.4	12.9	11.8	9.1	5.3
11	************************			15.4	15.0	14.6	14.2	13.7	13.3	12.8	12.3	11.2	8.7	5.0
12	************************			14.8	14.4	14.0	13.6	13.1	12.7	12.2	11.8	10.7	8.3	4.8
13	************************			14.2	13.8	13.4	13.0	12.6	12.2	11.8	11.3	10.3	8.0	4.6
14	************************			13.7	13.3	13.0	12.6	12.2	11.8	11.3	10.9	9.9	7.7	4.4
15	************************			13.2	12.9	12.5	12.1	11.8	11.4	10.9	10.5	9.6	7.4	4.3
16	************************			12.8	12.5	12.1	11.8	11.4	11.0	10.6	10.2	9.3	7.2	4.2
17	************************			12.4	12.1	11.8	11.4	11.0	10.7	10.3	9.9	9.0	7.0	4.0
18	************************			12.1	11.8	11.4	11.1	10.7	10.4	10.0	9.6	8.8	6.8	3.9
19	************************			11.8	11.4	11.1	10.8	10.4	10.1	9.7	9.3	8.5	6.6	3.8
20	************************			11.5	11.2	10.8	10.5	10.2	9.8	9.5	9.1	8.3	6.4	3.7
21	************************			11.2	10.9	10.6	10.3	9.9	9.6	9.2	8.9	8.1	6.3	3.6
22	********************************				10.6	10.3	10.0	9.7	9.4	9.0	8.7	7.9	6.1	3.5
23	********************************				10.4	10.1	9.8	9.5	9.2	8.8	8.5	7.8	6.0	3.5
24	********************************				10.2	9.9	9.6	9.3	9.0	8.7	8.3	7.6	5.9	3.4
25	********************************				10.0	9.7	9.4	9.1	8.8	8.5	8.1	7.4	5.8	3.3
30	********************************				9.1	8.8	8.6	8.3	8.0	7.7	7.4	6.8	5.3	3.0
35	********************************				8.4	8.2	7.9	7.7	7.4	7.2	6.9	6.3	4.9	2.8
40	********************************				7.9	7.7	7.4	7.2	7.0	6.7	6.4	5.9	4.6	2.6
45	**					7.2	7.0	6.8	6.6	6.3	6.1	5.5	4.3	2.5
50	**					6.9	6.6	6.4	6.2	6.0	5.8	5.3	4.1	2.4
55	**					6.5	6.3	6.1	5.9	5.7	5.5	5.0	3.9	2.2
60	**					6.3	6.1	5.9	5.7	5.5	5.3	4.8	3.7	2.1
65	**						5.8	5.6	5.5	5.3	5.1	4.6	3.6	2.1
70	**						5.6	5.4	5.3	5.1	4.9	4.4	3.4	2.0
75	**						5.4	5.3	5.1	4.9	4.7	4.3	3.3	1.9
80	**						5.3	5.1	4.9	4.7	4.6	4.2	3.2	1.9
85	**						5.1	4.9	4.8	4.6	4.4	4.0	3.1	1.8
90	**							4.8	4.6	4.5	4.3	3.9	3.0	1.8
95	**							4.7	4.5	4.3	4.2	3.8	3.0	1.7
100	**							4.6	4.4	4.2	4.1	3.7	2.9	1.7
125	**								3.9	3.8	3.6	3.3	2.6	1.5
150	**									3.5	3.3	3.0	2.4	1.4
200	**											2.6	2.0	1.2
250	**												1.8	1.1
300	**												1.7	1.0
350	**													0.9

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Saskatchewan

NUMERATOR OF PERCENTAGE ('000)	ESTIMATED PERCENTAGE 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	********	43.0	42.7	42.1	41.0	39.8	38.6	37.4	36.1	34.8	33.4	30.5	23.6	13.7
2	********	30.4	30.2	29.8	29.0	28.1	27.3	26.4	25.5	24.6	23.6	21.6	16.7	9.7
3	********	24.8	24.7	24.3	23.6	23.0	22.3	21.6	20.9	20.1	19.3	17.6	13.7	7.9
4	********	********	21.4	21.0	20.5	19.9	19.3	18.7	18.1	17.4	16.7	15.3	11.8	6.8
5	********	********	19.1	18.8	18.3	17.8	17.3	16.7	16.2	15.6	15.0	13.7	10.6	6.1
6	********	********	17.4	17.2	16.7	16.3	15.8	15.3	14.7	14.2	13.7	12.5	9.7	5.6
7	********	********	16.2	15.9	15.5	15.0	14.6	14.1	13.7	13.2	12.6	11.5	8.9	5.2
8	********	********	********	14.9	14.5	14.1	13.7	13.2	12.8	12.3	11.8	10.8	8.4	4.8
9	********	********	********	14.0	13.7	13.3	12.9	12.5	12.0	11.6	11.1	10.2	7.9	4.6
10	********	********	********	13.3	13.0	12.6	12.2	11.8	11.4	11.0	10.6	9.7	7.5	4.3
11	********	********	********	12.7	12.3	12.0	11.6	11.3	10.9	10.5	10.1	9.2	7.1	4.1
12	********	********	********	12.1	11.8	11.5	11.1	10.8	10.4	10.0	9.7	8.8	6.8	3.9
13	********	********	********	11.7	11.4	11.0	10.7	10.4	10.0	9.7	9.3	8.5	6.6	3.8
14	********	********	********	11.2	10.9	10.6	10.3	10.0	9.7	9.3	8.9	8.2	6.3	3.6
15	********	********	********	10.9	10.6	10.3	10.0	9.7	9.3	9.0	8.6	7.9	6.1	3.5
16	********	********	********	10.5	10.2	10.0	9.7	9.3	9.0	8.7	8.4	7.6	5.9	3.4
17	********	********	********	10.2	9.9	9.7	9.4	9.1	8.8	8.4	8.1	7.4	5.7	3.3
18	********	********	********	9.9	9.7	9.4	9.1	8.8	8.5	8.2	7.9	7.2	5.6	3.2
19	********	********	********	9.7	9.4	9.1	8.9	8.6	8.3	8.0	7.7	7.0	5.4	3.1
20	********	********	********	********	9.2	8.9	8.6	8.4	8.1	7.8	7.5	6.8	5.3	3.1
21	********	********	********	********	8.9	8.7	8.4	8.2	7.9	7.6	7.3	6.7	5.2	3.0
22	********	********	********	********	8.7	8.5	8.2	8.0	7.7	7.4	7.1	6.5	5.0	2.9
23	********	********	********	********	8.5	8.3	8.1	7.8	7.5	7.3	7.0	6.4	4.9	2.8
24	********	********	********	********	8.4	8.1	7.9	7.6	7.4	7.1	6.8	6.2	4.8	2.8
25	********	********	********	********	8.2	8.0	7.7	7.5	7.2	7.0	6.7	6.1	4.7	2.7
30	********	********	********	********	7.5	7.3	7.1	6.8	6.6	6.4	6.1	5.6	4.3	2.5
35	********	********	********	********	6.9	6.7	6.5	6.3	6.1	5.9	5.7	5.2	4.0	2.3
40	********	********	********	********	********	6.3	6.1	5.9	5.7	5.5	5.3	4.8	3.7	2.2
45	********	********	********	********	********	5.9	5.8	5.6	5.4	5.2	5.0	4.6	3.5	2.0
50	********	********	********	********	********	5.6	5.5	5.3	5.1	4.9	4.7	4.3	3.3	1.9
55	********	********	********	********	********	5.4	5.2	5.0	4.9	4.7	4.5	4.1	3.2	1.8
60	********	********	********	********	********	********	5.0	4.8	4.7	4.5	4.3	3.9	3.1	1.8
65	********	********	********	********	********	********	4.8	4.6	4.5	4.3	4.1	3.8	2.9	1.7
70	********	********	********	********	********	********	4.6	4.5	4.3	4.2	4.0	3.6	2.8	1.6
75	********	********	********	********	********	********	4.5	4.3	4.2	4.0	3.9	3.5	2.7	1.6
80	********	********	********	********	********	********	********	4.2	4.0	3.9	3.7	3.4	2.6	1.5
85	********	********	********	********	********	********	********	4.1	3.9	3.8	3.6	3.3	2.6	1.5
90	********	********	********	********	********	********	********	3.9	3.8	3.7	3.5	3.2	2.5	1.4
95	********	********	********	********	********	********	********	3.8	3.7	3.6	3.4	3.1	2.4	1.4
100	********	********	********	********	********	********	********	********	3.6	3.5	3.3	3.1	2.4	1.4
125	********	********	********	********	********	********	********	********	********	3.1	3.0	2.7	2.1	1.2
150	********	********	********	********	********	********	********	********	********	********	2.7	2.5	1.9	1.1
200	********	********	********	********	********	********	********	********	********	********	********	********	1.7	1.0
250	********	********	********	********	********	********	********	********	********	********	********	********	1.5	0.9
300	********	********	********	********	********	********	********	********	********	********	********	********	********	0.8

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Alberta

NUMERATOR OF PERCENTAGE ('000)	**ESTIMATED PERCENTAGE** 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	73.2	72.9	72.5	71.4	69.5	67.5	65.5	63.4	61.3	59.1	56.7	51.8	40.1	23.2
2	********	51.5	51.3	50.5	49.1	47.8	46.3	44.9	43.3	41.8	40.1	36.6	28.4	16.4
3	********	42.1	41.9	41.2	40.1	39.0	37.8	36.6	35.4	34.1	32.8	29.9	23.2	13.4
4	********	36.4	36.3	35.7	34.7	33.8	32.8	31.7	30.6	29.5	28.4	25.9	20.1	11.6
5	********	32.6	32.4	31.9	31.1	30.2	29.3	28.4	27.4	26.4	25.4	23.2	17.9	10.4
6	********	29.8	29.6	29.1	28.4	27.6	26.7	25.9	25.0	24.1	23.2	21.1	16.4	9.5
7	********	27.5	27.4	27.0	26.3	25.5	24.8	24.0	23.2	22.3	21.4	19.6	15.2	8.8
8	********	25.8	25.6	25.2	24.6	23.9	23.2	22.4	21.7	20.9	20.1	18.3	14.2	8.2
9	********	24.3	24.2	23.8	23.2	22.5	21.8	21.1	20.4	19.7	18.9	17.3	13.4	7.7
10	********	23.0	22.9	22.6	22.0	21.4	20.7	20.1	19.4	18.7	17.9	16.4	12.7	7.3
11	********	22.0	21.9	21.5	21.0	20.4	19.8	19.1	18.5	17.8	17.1	15.6	12.1	7.0
12	********	********	20.9	20.6	20.1	19.5	18.9	18.3	17.7	17.0	16.4	15.0	11.6	6.7
13	********	********	20.1	19.8	19.3	18.7	18.2	17.6	17.0	16.4	15.7	14.4	11.1	6.4
14	********	********	19.4	19.1	18.6	18.0	17.5	17.0	16.4	15.8	15.2	13.8	10.7	6.2
15	********	********	18.7	18.4	17.9	17.4	16.9	16.4	15.8	15.2	14.7	13.4	10.4	6.0
16	********	********	18.1	17.8	17.4	16.9	16.4	15.9	15.3	14.8	14.2	12.9	10.0	5.8
17	********	********	17.6	17.3	16.9	16.4	15.9	15.4	14.9	14.3	13.8	12.6	9.7	5.6
18	********	********	17.1	16.8	16.4	15.9	15.4	15.0	14.4	13.9	13.4	12.2	9.5	5.5
19	********	********	16.6	16.4	15.9	15.5	15.0	14.6	14.1	13.5	13.0	11.9	9.2	5.3
20	********	********	16.2	16.0	15.5	15.1	14.7	14.2	13.7	13.2	12.7	11.6	9.0	5.2
21	********	********	15.8	15.6	15.2	14.7	14.3	13.8	13.4	12.9	12.4	11.3	8.8	5.1
22	********	********	15.5	15.2	14.8	14.4	14.0	13.5	13.1	12.6	12.1	11.0	8.6	4.9
23	********	********	15.1	14.9	14.5	14.1	13.7	13.2	12.8	12.3	11.8	10.8	8.4	4.8
24	********	********	********	14.6	14.2	13.8	13.4	12.9	12.5	12.1	11.6	10.6	8.2	4.7
25	********	********	********	14.3	13.9	13.5	13.1	12.7	12.3	11.8	11.3	10.4	8.0	4.6
30	********	********	********	13.0	12.7	12.3	12.0	11.6	11.2	10.8	10.4	9.5	7.3	4.2
35	********	********	********	12.1	11.7	11.4	11.1	10.7	10.4	10.0	9.6	8.8	6.8	3.9
40	********	********	********	11.3	11.0	10.7	10.4	10.0	9.7	9.3	9.0	8.2	6.3	3.7
45	********	********	********	10.6	10.4	10.1	9.8	9.5	9.1	8.8	8.5	7.7	6.0	3.5
50	********	********	********	10.1	9.8	9.6	9.3	9.0	8.7	8.4	8.0	7.3	5.7	3.3
55	********	********	********	9.6	9.4	9.1	8.8	8.6	8.3	8.0	7.7	7.0	5.4	3.1
60	********	********	********	********	9.0	8.7	8.5	8.2	7.9	7.6	7.3	6.7	5.2	3.0
65	********	********	********	********	8.6	8.4	8.1	7.9	7.6	7.3	7.0	6.4	5.0	2.9
70	********	********	********	********	8.3	8.1	7.8	7.6	7.3	7.1	6.8	6.2	4.8	2.8
75	********	********	********	********	8.0	7.8	7.6	7.3	7.1	6.8	6.6	6.0	4.6	2.7
80	********	********	********	********	7.8	7.6	7.3	7.1	6.9	6.6	6.3	5.8	4.5	2.6
85	********	********	********	********	7.5	7.3	7.1	6.9	6.6	6.4	6.2	5.6	4.4	2.5
90	********	********	********	********	7.3	7.1	6.9	6.7	6.5	6.2	6.0	5.5	4.2	2.4
95	********	********	********	********	7.1	6.9	6.7	6.5	6.3	6.1	5.8	5.3	4.1	2.4
100	********	********	********	********	6.9	6.8	6.6	6.3	6.1	5.9	5.7	5.2	4.0	2.3
125	********	********	********	********	********	6.0	5.9	5.7	5.5	5.3	5.1	4.6	3.6	2.1
150	********	********	********	********	********	5.5	5.3	5.2	5.0	4.8	4.6	4.2	3.3	1.9
200	********	********	********	********	********	********	4.6	4.5	4.3	4.2	4.0	3.7	2.8	1.6
250	********	********	********	********	********	********	********	4.0	3.9	3.7	3.6	3.3	2.5	1.5
300	********	********	********	********	********	********	********	********	3.5	3.4	3.3	3.0	2.3	1.3
350	********	********	********	********	********	********	********	********	3.3	3.2	3.0	2.8	2.1	1.2
400	********	********	********	********	********	********	********	********	********	3.0	2.8	2.6	2.0	1.2
450	********	********	********	********	********	********	********	********	********	********	2.7	2.4	1.9	1.1
500	********	********	********	********	********	********	********	********	********	********	********	2.3	1.8	1.0
750	********	********	********	********	********	********	********	********	********	********	********	********	1.5	0.8
1000	********	********	********	********	********	********	********	********	********	********	********	********	********	0.7

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - British Columbia

NUMERATOR OF PERCENTAGE ('000)	ESTIMATED PERCENTAGE 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	79.9	79.5	79.1	77.9	75.8	73.7	71.5	69.2	66.9	64.4	61.9	56.5	43.8	25.3
2	********	56.2	55.9	55.1	53.6	52.1	50.6	48.9	47.3	45.6	43.8	40.0	31.0	17.9
3	********	45.9	45.7	45.0	43.8	42.5	41.3	40.0	38.6	37.2	35.7	32.6	25.3	14.6
4	********	39.8	39.6	39.0	37.9	36.8	35.7	34.6	33.4	32.2	31.0	28.3	21.9	12.6
5	********	35.6	35.4	34.8	33.9	33.0	32.0	31.0	29.9	28.8	27.7	25.3	19.6	11.3
6	********	32.5	32.3	31.8	31.0	30.1	29.2	28.3	27.3	26.3	25.3	23.1	17.9	10.3
7	********	30.1	29.9	29.4	28.7	27.9	27.0	26.2	25.3	24.4	23.4	21.4	16.5	9.6
8	********	28.1	28.0	27.5	26.8	26.1	25.3	24.5	23.6	22.8	21.9	20.0	15.5	8.9
9	********	26.5	26.4	26.0	25.3	24.6	23.8	23.1	22.3	21.5	20.6	18.8	14.6	8.4
10	********	25.1	25.0	24.6	24.0	23.3	22.6	21.9	21.1	20.4	19.6	17.9	13.8	8.0
11	********	24.0	23.9	23.5	22.9	22.2	21.6	20.9	20.2	19.4	18.7	17.0	13.2	7.6
12	********	23.0	22.8	22.5	21.9	21.3	20.6	20.0	19.3	18.6	17.9	16.3	12.6	7.3
13	********	22.1	21.9	21.6	21.0	20.4	19.8	19.2	18.5	17.9	17.2	15.7	12.1	7.0
14	********	21.3	21.1	20.8	20.3	19.7	19.1	18.5	17.9	17.2	16.5	15.1	11.7	6.8
15	********	20.5	20.4	20.1	19.6	19.0	18.5	17.9	17.3	16.6	16.0	14.6	11.3	6.5
16	********	19.9	19.8	19.5	19.0	18.4	17.9	17.3	16.7	16.1	15.5	14.1	10.9	6.3
17	****************		19.2	18.9	18.4	17.9	17.3	16.8	16.2	15.6	15.0	13.7	10.6	6.1
18	****************		18.6	18.4	17.9	17.4	16.9	16.3	15.8	15.2	14.6	13.3	10.3	6.0
19	****************		18.2	17.9	17.4	16.9	16.4	15.9	15.3	14.8	14.2	13.0	10.0	5.8
20	****************		17.7	17.4	17.0	16.5	16.0	15.5	15.0	14.4	13.8	12.6	9.8	5.7
21	****************		17.3	17.0	16.5	16.1	15.6	15.1	14.6	14.1	13.5	12.3	9.6	5.5
22	****************		16.9	16.6	16.2	15.7	15.2	14.8	14.3	13.7	13.2	12.0	9.3	5.4
23	****************		16.5	16.2	15.8	15.4	14.9	14.4	13.9	13.4	12.9	11.8	9.1	5.3
24	****************		16.2	15.9	15.5	15.0	14.6	14.1	13.7	13.2	12.6	11.5	8.9	5.2
25	****************		15.8	15.6	15.2	14.7	14.3	13.8	13.4	12.9	12.4	11.3	8.8	5.1
30	****************		14.4	14.2	13.8	13.5	13.1	12.6	12.2	11.8	11.3	10.3	8.0	4.6
35	************************			13.2	12.8	12.5	12.1	11.7	11.3	10.9	10.5	9.6	7.4	4.3
40	************************			12.3	12.0	11.7	11.3	10.9	10.6	10.2	9.8	8.9	6.9	4.0
45	************************			11.6	11.3	11.0	10.7	10.3	10.0	9.6	9.2	8.4	6.5	3.8
50	************************			11.0	10.7	10.4	10.1	9.8	9.5	9.1	8.8	8.0	6.2	3.6
55	************************			10.5	10.2	9.9	9.6	9.3	9.0	8.7	8.3	7.6	5.9	3.4
60	************************			10.1	9.8	9.5	9.2	8.9	8.6	8.3	8.0	7.3	5.7	3.3
65	************************			9.7	9.4	9.1	8.9	8.6	8.3	8.0	7.7	7.0	5.4	3.1
70	************************			9.3	9.1	8.8	8.5	8.3	8.0	7.7	7.4	6.8	5.2	3.0
75	************************			9.0	8.8	8.5	8.3	8.0	7.7	7.4	7.1	6.5	5.1	2.9
80	************************			8.7	8.5	8.2	8.0	7.7	7.5	7.2	6.9	6.3	4.9	2.8
85	********************************				8.2	8.0	7.8	7.5	7.3	7.0	6.7	6.1	4.7	2.7
90	********************************				8.0	7.8	7.5	7.3	7.0	6.8	6.5	6.0	4.6	2.7
95	********************************				7.8	7.6	7.3	7.1	6.9	6.6	6.4	5.8	4.5	2.6
100	********************************				7.6	7.4	7.1	6.9	6.7	6.4	6.2	5.7	4.4	2.5
125	********************************				6.8	6.6	6.4	6.2	6.0	5.8	5.5	5.1	3.9	2.3
150	********************************				6.2	6.0	5.8	5.7	5.5	5.3	5.1	4.6	3.6	2.1
200	**					5.2	5.1	4.9	4.7	4.6	4.4	4.0	3.1	1.8
250	**						4.5	4.4	4.2	4.1	3.9	3.6	2.8	1.6
300	**						4.1	4.0	3.9	3.7	3.6	3.3	2.5	1.5
350	**							3.7	3.6	3.4	3.3	3.0	2.3	1.4
400	**							3.5	3.3	3.2	3.1	2.8	2.2	1.3
450	**								3.2	3.0	2.9	2.7	2.1	1.2
500	**									2.9	2.8	2.5	2.0	1.1
750	**											2.1	1.6	0.9
1000	**												1.4	0.8

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Atlantic Provinces

NUMERATOR OF PERCENTAGE ('000)	**ESTIMATED PERCENTAGE** 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	********	47.3	47.0	46.3	45.1	43.8	42.5	41.2	39.8	38.3	36.8	33.6	26.0	15.0
2	********	33.4	33.3	32.7	31.9	31.0	30.1	29.1	28.1	27.1	26.0	23.8	18.4	10.6
3	********	27.3	27.2	26.7	26.0	25.3	24.5	23.8	23.0	22.1	21.3	19.4	15.0	8.7
4	********	23.6	23.5	23.2	22.5	21.9	21.3	20.6	19.9	19.2	18.4	16.8	13.0	7.5
5	********	21.1	21.0	20.7	20.2	19.6	19.0	18.4	17.8	17.1	16.5	15.0	11.6	6.7
6	********	19.3	19.2	18.9	18.4	17.9	17.4	16.8	16.2	15.6	15.0	13.7	10.6	6.1
7	********	17.9	17.8	17.5	17.0	16.6	16.1	15.6	15.0	14.5	13.9	12.7	9.8	5.7
8	********	16.7	16.6	16.4	15.9	15.5	15.0	14.5	14.1	13.5	13.0	11.9	9.2	5.3
9	********	15.8	15.7	15.4	15.0	14.6	14.2	13.7	13.3	12.8	12.3	11.2	8.7	5.0
10	********	********	14.9	14.6	14.3	13.9	13.4	13.0	12.6	12.1	11.6	10.6	8.2	4.8
11	********	********	14.2	14.0	13.6	13.2	12.8	12.4	12.0	11.6	11.1	10.1	7.8	4.5
12	********	********	13.6	13.4	13.0	12.6	12.3	11.9	11.5	11.1	10.6	9.7	7.5	4.3
13	********	********	13.0	12.8	12.5	12.2	11.8	11.4	11.0	10.6	10.2	9.3	7.2	4.2
14	********	********	12.6	12.4	12.0	11.7	11.4	11.0	10.6	10.2	9.8	9.0	7.0	4.0
15	********	********	12.1	12.0	11.6	11.3	11.0	10.6	10.3	9.9	9.5	8.7	6.7	3.9
16	********	********	11.8	11.6	11.3	11.0	10.6	10.3	9.9	9.6	9.2	8.4	6.5	3.8
17	********	********	11.4	11.2	10.9	10.6	10.3	10.0	9.6	9.3	8.9	8.1	6.3	3.6
18	********	********	11.1	10.9	10.6	10.3	10.0	9.7	9.4	9.0	8.7	7.9	6.1	3.5
19	********	********	********	10.6	10.3	10.1	9.8	9.4	9.1	8.8	8.4	7.7	6.0	3.4
20	********	********	********	10.4	10.1	9.8	9.5	9.2	8.9	8.6	8.2	7.5	5.8	3.4
21	********	********	********	10.1	9.8	9.6	9.3	9.0	8.7	8.4	8.0	7.3	5.7	3.3
22	********	********	********	9.9	9.6	9.3	9.1	8.8	8.5	8.2	7.8	7.2	5.5	3.2
23	********	********	********	9.7	9.4	9.1	8.9	8.6	8.3	8.0	7.7	7.0	5.4	3.1
24	********	********	********	9.5	9.2	8.9	8.7	8.4	8.1	7.8	7.5	6.9	5.3	3.1
25	********	********	********	9.3	9.0	8.8	8.5	8.2	8.0	7.7	7.4	6.7	5.2	3.0
30	********	********	********	8.5	8.2	8.0	7.8	7.5	7.3	7.0	6.7	6.1	4.8	2.7
35	********	********	********	7.8	7.6	7.4	7.2	7.0	6.7	6.5	6.2	5.7	4.4	2.5
40	********	********	********	7.3	7.1	6.9	6.7	6.5	6.3	6.1	5.8	5.3	4.1	2.4
45	********	********	********	6.9	6.7	6.5	6.3	6.1	5.9	5.7	5.5	5.0	3.9	2.2
50	********	********	********	********	6.4	6.2	6.0	5.8	5.6	5.4	5.2	4.8	3.7	2.1
55	********	********	********	********	6.1	5.9	5.7	5.5	5.4	5.2	5.0	4.5	3.5	2.0
60	********	********	********	********	5.8	5.7	5.5	5.3	5.1	4.9	4.8	4.3	3.4	1.9
65	********	********	********	********	5.6	5.4	5.3	5.1	4.9	4.8	4.6	4.2	3.2	1.9
70	********	********	********	********	5.4	5.2	5.1	4.9	4.8	4.6	4.4	4.0	3.1	1.8
75	********	********	********	********	5.2	5.1	4.9	4.8	4.6	4.4	4.3	3.9	3.0	1.7
80	********	********	********	********	5.0	4.9	4.8	4.6	4.4	4.3	4.1	3.8	2.9	1.7
85	********	********	********	********	4.9	4.8	4.6	4.5	4.3	4.2	4.0	3.6	2.8	1.6
90	********	********	********	********	4.8	4.6	4.5	4.3	4.2	4.0	3.9	3.5	2.7	1.6
95	********	********	********	********	********	4.5	4.4	4.2	4.1	3.9	3.8	3.4	2.7	1.5
100	********	********	********	********	********	4.4	4.3	4.1	4.0	3.8	3.7	3.4	2.6	1.5
125	********	********	********	********	********	3.9	3.8	3.7	3.6	3.4	3.3	3.0	2.3	1.3
150	********	********	********	********	********	********	3.5	3.4	3.2	3.1	3.0	2.7	2.1	1.2
200	********	********	********	********	********	********	********	2.9	2.8	2.7	2.6	2.4	1.8	1.1
250	********	********	********	********	********	********	********	********	2.5	2.4	2.3	2.1	1.6	1.0
300	********	********	********	********	********	********	********	********	********	2.2	2.1	1.9	1.5	0.9
350	********	********	********	********	********	********	********	********	********	********	2.0	1.8	1.4	0.8
400	********	********	********	********	********	********	********	********	********	********	********	1.7	1.3	0.8
450	********	********	********	********	********	********	********	********	********	********	********	1.6	1.2	0.7
500	********	********	********	********	********	********	********	********	********	********	********	********	1.2	0.7
750	********	********	********	********	********	********	********	********	********	********	********	********	********	0.5

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Prairie Provinces

NUMERATOR OF PERCENTAGE	**ESTIMATED PERCENTAGE**													
('000)	0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	59.9	59.6	59.3	58.4	56.8	55.2	53.6	51.9	50.1	48.3	46.4	42.4	32.8	18.9
2	********	42.1	41.9	41.3	40.2	39.0	37.9	36.7	35.4	34.1	32.8	29.9	23.2	13.4
3	********	34.4	34.2	33.7	32.8	31.9	30.9	29.9	28.9	27.9	26.8	24.5	18.9	10.9
4	********	29.8	29.6	29.2	28.4	27.6	26.8	25.9	25.1	24.1	23.2	21.2	16.4	9.5
5	********	26.7	26.5	26.1	25.4	24.7	24.0	23.2	22.4	21.6	20.7	18.9	14.7	8.5
6	********	24.3	24.2	23.8	23.2	22.5	21.9	21.2	20.5	19.7	18.9	17.3	13.4	7.7
7	********	22.5	22.4	22.1	21.5	20.9	20.2	19.6	18.9	18.3	17.5	16.0	12.4	7.2
8	********	21.1	21.0	20.6	20.1	19.5	18.9	18.3	17.7	17.1	16.4	15.0	11.6	6.7
9	********	19.9	19.8	19.5	18.9	18.4	17.9	17.3	16.7	16.1	15.5	14.1	10.9	6.3
10	********	18.8	18.7	18.5	18.0	17.5	16.9	16.4	15.8	15.3	14.7	13.4	10.4	6.0
11	********	18.0	17.9	17.6	17.1	16.6	16.2	15.6	15.1	14.6	14.0	12.8	9.9	5.7
12	********	17.2	17.1	16.9	16.4	15.9	15.5	15.0	14.5	13.9	13.4	12.2	9.5	5.5
13	********	16.5	16.4	16.2	15.8	15.3	14.9	14.4	13.9	13.4	12.9	11.7	9.1	5.3
14	********	15.9	15.8	15.6	15.2	14.8	14.3	13.9	13.4	12.9	12.4	11.3	8.8	5.1
15	********	15.4	15.3	15.1	14.7	14.3	13.8	13.4	12.9	12.5	12.0	10.9	8.5	4.9
16	********	14.9	14.8	14.6	14.2	13.8	13.4	13.0	12.5	12.1	11.6	10.6	8.2	4.7
17	********	14.5	14.4	14.2	13.8	13.4	13.0	12.6	12.2	11.7	11.3	10.3	8.0	4.6
18	********	14.0	14.0	13.8	13.4	13.0	12.6	12.2	11.8	11.4	10.9	10.0	7.7	4.5
19	********	13.7	13.6	13.4	13.0	12.7	12.3	11.9	11.5	11.1	10.6	9.7	7.5	4.3
20	****************		13.3	13.1	12.7	12.3	12.0	11.6	11.2	10.8	10.4	9.5	7.3	4.2
21	****************		12.9	12.7	12.4	12.0	11.7	11.3	10.9	10.5	10.1	9.2	7.2	4.1
22	****************		12.6	12.4	12.1	11.8	11.4	11.1	10.7	10.3	9.9	9.0	7.0	4.0
23	****************		12.4	12.2	11.8	11.5	11.2	10.8	10.4	10.1	9.7	8.8	6.8	3.9
24	****************		12.1	11.9	11.6	11.3	10.9	10.6	10.2	9.9	9.5	8.6	6.7	3.9
25	****************		11.9	11.7	11.4	11.0	10.7	10.4	10.0	9.7	9.3	8.5	6.6	3.8
30	****************		10.8	10.7	10.4	10.1	9.8	9.5	9.1	8.8	8.5	7.7	6.0	3.5
35	****************		10.0	9.9	9.6	9.3	9.1	8.8	8.5	8.2	7.8	7.2	5.5	3.2
40	************************			9.2	9.0	8.7	8.5	8.2	7.9	7.6	7.3	6.7	5.2	3.0
45	************************			8.7	8.5	8.2	8.0	7.7	7.5	7.2	6.9	6.3	4.9	2.8
50	************************			8.3	8.0	7.8	7.6	7.3	7.1	6.8	6.6	6.0	4.6	2.7
55	************************			7.9	7.7	7.4	7.2	7.0	6.8	6.5	6.3	5.7	4.4	2.6
60	************************			7.5	7.3	7.1	6.9	6.7	6.5	6.2	6.0	5.5	4.2	2.4
65	************************			7.2	7.0	6.8	6.6	6.4	6.2	6.0	5.8	5.3	4.1	2.3
70	************************			7.0	6.8	6.6	6.4	6.2	6.0	5.8	5.5	5.1	3.9	2.3
75	************************			6.7	6.6	6.4	6.2	6.0	5.8	5.6	5.4	4.9	3.8	2.2
80	************************			6.5	6.4	6.2	6.0	5.8	5.6	5.4	5.2	4.7	3.7	2.1
85	************************			6.3	6.2	6.0	5.8	5.6	5.4	5.2	5.0	4.6	3.6	2.1
90	************************			6.2	6.0	5.8	5.6	5.5	5.3	5.1	4.9	4.5	3.5	2.0
95	************************			6.0	5.8	5.7	5.5	5.3	5.1	5.0	4.8	4.3	3.4	1.9
100	********************************				5.7	5.5	5.4	5.2	5.0	4.8	4.6	4.2	3.3	1.9
125	********************************				5.1	4.9	4.8	4.6	4.5	4.3	4.1	3.8	2.9	1.7
150	********************************				4.6	4.5	4.4	4.2	4.1	3.9	3.8	3.5	2.7	1.5
200	**					3.9	3.8	3.7	3.5	3.4	3.3	3.0	2.3	1.3
250	**					3.5	3.4	3.3	3.2	3.1	2.9	2.7	2.1	1.2
300	**						3.1	3.0	2.9	2.8	2.7	2.4	1.9	1.1
350	**						2.9	2.8	2.7	2.6	2.5	2.3	1.8	1.0
400	**							2.6	2.5	2.4	2.3	2.1	1.6	0.9
450	**							2.4	2.4	2.3	2.2	2.0	1.5	0.9
500	**								2.2	2.2	2.1	1.9	1.5	0.8
750	**										1.7	1.5	1.2	0.7
1000	**												1.0	0.6
1500	**													0.5

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

RESIDENTIAL TELEPHONE SERVICE SURVEY - May 2003

Approximate Sampling Variability Tables - Canada

NUMERATOR OF PERCENTAGE ('000)	ESTIMATED PERCENTAGE 0.1%	1.0%	2.0%	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	50.0%	70.0%	90.0%
1	80.5	80.1	79.7	78.5	76.4	74.2	72.0	69.7	67.4	64.9	62.4	56.9	44.1	25.5
2	56.9	56.6	56.4	55.5	54.0	52.5	50.9	49.3	47.6	45.9	44.1	40.3	31.2	18.0
3	46.5	46.3	46.0	45.3	44.1	42.9	41.6	40.3	38.9	37.5	36.0	32.9	25.5	14.7
4	40.2	40.1	39.9	39.2	38.2	37.1	36.0	34.9	33.7	32.5	31.2	28.5	22.1	12.7
5	36.0	35.8	35.6	35.1	34.2	33.2	32.2	31.2	30.1	29.0	27.9	25.5	19.7	11.4
6	32.9	32.7	32.5	32.0	31.2	30.3	29.4	28.5	27.5	26.5	25.5	23.2	18.0	10.4
7	30.4	30.3	30.1	29.7	28.9	28.1	27.2	26.4	25.5	24.5	23.6	21.5	16.7	9.6
8	28.5	28.3	28.2	27.7	27.0	26.2	25.5	24.7	23.8	23.0	22.1	20.1	15.6	9.0
9	26.8	26.7	26.6	26.2	25.5	24.7	24.0	23.2	22.5	21.6	20.8	19.0	14.7	8.5
10	25.4	25.3	25.2	24.8	24.2	23.5	22.8	22.1	21.3	20.5	19.7	18.0	13.9	8.1
11	24.3	24.2	24.0	23.7	23.0	22.4	21.7	21.0	20.3	19.6	18.8	17.2	13.3	7.7
12	23.2	23.1	23.0	22.7	22.1	21.4	20.8	20.1	19.4	18.7	18.0	16.4	12.7	7.4
13	********	22.2	22.1	21.8	21.2	20.6	20.0	19.3	18.7	18.0	17.3	15.8	12.2	7.1
14	********	21.4	21.3	21.0	20.4	19.8	19.2	18.6	18.0	17.3	16.7	15.2	11.8	6.8
15	********	20.7	20.6	20.3	19.7	19.2	18.6	18.0	17.4	16.8	16.1	14.7	11.4	6.6
16	********	20.0	19.9	19.6	19.1	18.6	18.0	17.4	16.8	16.2	15.6	14.2	11.0	6.4
17	********	19.4	19.3	19.0	18.5	18.0	17.5	16.9	16.3	15.7	15.1	13.8	10.7	6.2
18	********	18.9	18.8	18.5	18.0	17.5	17.0	16.4	15.9	15.3	14.7	13.4	10.4	6.0
19	********	18.4	18.3	18.0	17.5	17.0	16.5	16.0	15.5	14.9	14.3	13.1	10.1	5.8
20	********	17.9	17.8	17.5	17.1	16.6	16.1	15.6	15.1	14.5	13.9	12.7	9.9	5.7
21	********	17.5	17.4	17.1	16.7	16.2	15.7	15.2	14.7	14.2	13.6	12.4	9.6	5.6
22	********	17.1	17.0	16.7	16.3	15.8	15.4	14.9	14.4	13.8	13.3	12.1	9.4	5.4
23	********	16.7	16.6	16.4	15.9	15.5	15.0	14.5	14.0	13.5	13.0	11.9	9.2	5.3
24	********	16.4	16.3	16.0	15.6	15.2	14.7	14.2	13.8	13.3	12.7	11.6	9.0	5.2
25	********	16.0	15.9	15.7	15.3	14.8	14.4	13.9	13.5	13.0	12.5	11.4	8.8	5.1
30	********	14.6	14.6	14.3	13.9	13.6	13.1	12.7	12.3	11.9	11.4	10.4	8.1	4.6
35	********	13.5	13.5	13.3	12.9	12.5	12.2	11.8	11.4	11.0	10.5	9.6	7.5	4.3
40	********	12.7	12.6	12.4	12.1	11.7	11.4	11.0	10.7	10.3	9.9	9.0	7.0	4.0
45	********	11.9	11.9	11.7	11.4	11.1	10.7	10.4	10.0	9.7	9.3	8.5	6.6	3.8
50	********	11.3	11.3	11.1	10.8	10.5	10.2	9.9	9.5	9.2	8.8	8.1	6.2	3.6
55	********	10.8	10.7	10.6	10.3	10.0	9.7	9.4	9.1	8.8	8.4	7.7	5.9	3.4
60	********	10.3	10.3	10.1	9.9	9.6	9.3	9.0	8.7	8.4	8.1	7.4	5.7	3.3
65	********	9.9	9.9	9.7	9.5	9.2	8.9	8.6	8.4	8.1	7.7	7.1	5.5	3.2
70	********	9.6	9.5	9.4	9.1	8.9	8.6	8.3	8.1	7.8	7.5	6.8	5.3	3.0
75	********	9.3	9.2	9.1	8.8	8.6	8.3	8.1	7.8	7.5	7.2	6.6	5.1	2.9
80	********	9.0	8.9	8.8	8.5	8.3	8.1	7.8	7.5	7.3	7.0	6.4	4.9	2.8
85	********	8.7	8.6	8.5	8.3	8.1	7.8	7.6	7.3	7.0	6.8	6.2	4.8	2.8
90	********	8.4	8.4	8.3	8.1	7.8	7.6	7.4	7.1	6.8	6.6	6.0	4.6	2.7
95	********	8.2	8.2	8.1	7.8	7.6	7.4	7.2	6.9	6.7	6.4	5.8	4.5	2.6
100	********	8.0	8.0	7.8	7.6	7.4	7.2	7.0	6.7	6.5	6.2	5.7	4.4	2.5
125	********	********	7.1	7.0	6.8	6.6	6.4	6.2	6.0	5.8	5.6	5.1	3.9	2.3
150	********	********	6.5	6.4	6.2	6.1	5.9	5.7	5.5	5.3	5.1	4.6	3.6	2.1
200	********	********	5.6	5.5	5.4	5.2	5.1	4.9	4.8	4.6	4.4	4.0	3.1	1.8
250	********	********	********	5.0	4.8	4.7	4.6	4.4	4.3	4.1	3.9	3.6	2.8	1.6
300	********	********	********	4.5	4.4	4.3	4.2	4.0	3.9	3.7	3.6	3.3	2.5	1.5
350	********	********	********	4.2	4.1	4.0	3.8	3.7	3.6	3.5	3.3	3.0	2.4	1.4
400	********	********	********	3.9	3.8	3.7	3.6	3.5	3.4	3.2	3.1	2.8	2.2	1.3
450	********	********	********	3.7	3.6	3.5	3.4	3.3	3.2	3.1	2.9	2.7	2.1	1.2
500	********	********	********	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.5	2.0	1.1
750	********	********	********	********	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.1	1.6	0.9
1000	********	********	********	********	2.4	2.3	2.3	2.2	2.1	2.1	2.0	1.8	1.4	0.8
1500	********	********	********	********	********	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.1	0.7
2000	********	********	********	********	********	********	1.6	1.6	1.5	1.5	1.4	1.3	1.0	0.6
3000	********	********	********	********	********	********	********	1.3	1.2	1.2	1.1	1.0	0.8	0.5
4000	********	********	********	********	********	********	********	********	********	1.0	1.0	0.9	0.7	0.4
5000	********	********	********	********	********	********	********	********	********	********	********	0.8	0.6	0.4
6000	********	********	********	********	********	********	********	********	********	********	********	0.7	0.6	0.3
7000	********	********	********	********	********	********	********	********	********	********	********	********	0.5	0.3
8000	********	********	********	********	********	********	********	********	********	********	********	********	0.5	0.3
9000	********	********	********	********	********	********	********	********	********	********	********	********	********	0.3
10000	********	********	********	********	********	********	********	********	********	********	********	********	********	0.3

NOTE: FOR CORRECT USAGE OF THESE TABLES, PLEASE REFER TO MICRODATA DOCUMENTATION.

11.0 Weighting

Since the Residential Telephone Service Survey (RTSS) used a sub-sample of the Labour Force Survey (LFS) sample, the derivation of weights for the survey records is clearly tied to the weighting procedure used for the LFS. The LFS weighting procedure is briefly described below.

11.1 Weighting Procedures for the Labour Force Survey

In the LFS, the final weight attached to each record is the product of the following factors: the basic weight, the cluster sub-weight, the stabilization weight, the balancing factor for non-response, and the province-age-sex and sub-provincial area ratio adjustment factor. Each is described below.

Basic Weight

In a probability sample, the sample design itself determines weights which must be used to produce unbiased estimates of the population. Each record must be weighted by the inverse of the probability of selecting the person to whom the record refers. In the example of a 2% simple random sample, this probability would be 0.02 for each person and the records must be weighted by 1 / 0.02 = 50. Due to the complex LFS design, dwellings in different regions will have different basic weights. Because all eligible individuals in a dwelling are interviewed (directly or by proxy), this probability is essentially the same as the probability with which the dwelling is selected.

Cluster Sub-weight

The cluster delineation is such that the number of dwellings in the sample increases very slightly with moderate growth in the housing stock. Substantial growth can be tolerated in an isolated cluster before the additional sample represents a field collection problem. However, if growth takes place in more than one cluster in an interviewer assignment, the cumulative effect of all increases may create a workload problem. In clusters where substantial growth has taken place, sub-sampling is used as a means of keeping interviewer assignments manageable. The cluster sub-weight represents the inverse of this sub-sampling ratio in clusters where sub-sampling has occurred.

Stabilization Weight

Sample stabilization is also used to address problems with sample size growth. Cluster sub-sampling addressed isolated growth in relatively small areas whereas sample stabilization accommodates the slow sample growth over time that is the result of a fixed sampling rate along with a general increase in the size of the population. Sample stabilization is the random dropping of dwellings from the sample in order to maintain the sample size at its desired level. The basic weight is adjusted by the ratio of the sample size, based on the fixed sampling rate, to the desired sample size. This adjustment factor is known as the stabilization weight. The adjustment is done within stabilization areas defined as dwellings belonging to the same employment insurance economic region and the same rotation group.

Non-response

For certain types of non-response (i.e. household temporarily absent, refusal), data from a previous month's interview with the household if any, is brought forward and used as the current month's data for the household.

In other cases, non-response is compensated for by proportionally increasing the weights of responding households. The weight of each responding record is increased by the ratio of the number of households that should have been interviewed, divided by the number that were actually interviewed. This adjustment is done separately for non-response areas, which are defined by employment insurance economic region, type of area, and rotation group. It is based on the assumption that the households that have been interviewed represent the characteristics of those that should have been interviewed within a non-response area.

Labour Force Survey Sub-weight

The product of the previously described weighting factors is called the LFS sub-weight. All members of the same sampled dwelling have the same sub-weight.

Sub-provincial and Province-Age-Sex Adjustments

The sub-weight can be used to derive a valid estimate of any characteristic for which information is collected by the LFS. However, these estimates will be based on a frame that contains some information that may be several years out of date and therefore not representative of the current population. Through the use of more up-to-date auxiliary information about the target population, the sample weights are adjusted to improve both the precision of the estimates and the sample's representation of the current population.

Independent estimates are available monthly for various age and sex groups by province. These are population projections based on the most recent Census data, records of births and deaths, and estimates of migration. In the final step, this auxiliary information is used to transform the sub-weight into the final weight. This is done using a calibration method. This method ensures that the final weights it produces sum to the census projections for the auxiliary variables, namely totals for various age-sex groups, economic regions (ER), census metropolitan areas (CMA), rotation groups, household and economic family size. Weights are also adjusted so that estimates of the previous month's industry and labour status estimates derived from the present month's sample, sum up to the corresponding estimates from the previous month's sample. This is called composite estimation. The entire adjustment is applied using the generalized regression technique.

This final weight is normally not used in the weighting for a supplement to the LFS. Instead, it is the sub-weight which is used, as explained in the following paragraphs.

11.2 Weighting Procedures for the Residential Telephone Service Survey

The principles behind the calculation of the weights for the Residential Telephone Service Survey are nearly identical to those for the LFS. However, this survey is a household-weighted survey, not a person-weighted survey. Also, further adjustments are made to the LFS sub-weights in order to derive a final weight for the individual records on the Residential Telephone Service Survey microdata file.

1) An adjustment to account for the use of a five-sixths sub-sample, instead of the full LFS sample.

2) A province-stratum adjustment to account for the additional non-response to the supplementary survey, i.e., non-response to the Residential Telephone Service Survey for individuals who did respond to the LFS or for which previous month's LFS data was brought forward. Note that a stratum roughly corresponds to an employment insurance economic region (EIER)-economic region (ER) region (as described in Section 5.2.2).

3) The final adjustment ensured that estimates produced for a province-household size group would agree with the known population totals for that province-household size group. The adjustments were made for household size groupings of 1, 2 and 3 or more people.

Adjustments 1) and 2) are taken into account by multiplying the LFS sub-weight for each responding Residential Telephone Service Survey record by:

$$\frac{sum\ of\ LFS\ sub-weights\ from\ each\ household\ responding\ to\ LFS}{sum\ of\ LFS\ sub-weights\ from\ each\ household\ responding\ to\ the\ RTSS}$$

to obtain a non-response adjusted Residential Telephone Service Survey sub-weight (WEIGHT1). This adjustment is performed at the province-stratum level.

Adjustment 3) is calculated by multiplying WEIGHT1 for each Residential Telephone Service Survey respondent by:

$$\frac{known\ population\ total\ for\ province-household\ size}{sum\ of\ weight\ (WEIGHT1)\ for\ responding\ household\ in\ province-household\ size}$$

The resulting weight (FINWT), is the final weight which appears on the Residential Telephone Service Survey microdata file.

12.0 Questionnaires

12.1 The Labour Force Survey Questionnaire

The Labour Force Survey Questionnaire (LFS_QuestE.pdf) is used to collect information on the current and most recent labour market activity of all household members 15 years of age or older. It includes questions on hours of work, job tenure, type of work, reason for hours lost or absent, job search undertaken, availability for work, and school attendance.

12.2 The Residential Telephone Service Survey Questionnaire

The Residential Telephone Service Survey questionnaire was used in May 2003 to collect the information for the supplementary survey. The file RTSS200305_QuestE.pdf contains the English questionnaire.

RTS_I01 **This is a voluntary survey on telephone service.**

RTS_Q01B **How many different telephone numbers are there for your residence? (Include cellular phone numbers and phone numbers used for business).**

INTERVIEWER: Include phone numbers used for businesses even if the business is not within the residence or if the employer is paying for the person's phone service within that person's household. This includes cell phones from work that are brought home. Exclude pagers.

0	0	(Go to RTS_Q02)
1	1	
2	2	
3	3 or more	
8	Refused..	(Go to RTS_Q08)
9	Don't know	(Go to RTS_Q08)

Default: (Go to RTS_Q01C)

Coverage: All respondents

RTS_Q01C **'Is this number for a cellular phone?' or (If RTS_Q01B = 2 or 3) then 'Are all of these numbers for cellular phones?'**

INTERVIEWER: If the phone number is for both regular and cellular phone, select <No>. A regular phone can be with a cord or cordless.

1	Yes
2	No
8	Refused
9	Don't know

Default: (Go to RTS_Q08)

Coverage: Respondents who have at least one phone number.

RTS_Q02 **Why don't you have a phone?**

1	Cancelled it	(Go to RTS_Q03)
2	Can't afford it	(Go to RTS_Q04)
3	Moved	(Go to RTS_Q05)
4	All other responses	(Go to RTS_Q05)
8	Refused	(Go to RTS_Q05)
9	Don't know	(Go to RTS_Q05)

Note: F1 NOTES: The following answers should be coded to "Can't afford it": Too expensive, Can't afford the phone, Unpaid phone bills, Service cancelled by the phone company, Moved and can't afford the installation price, Lost job, Unemployed, I'm on... (any form of social assistance), etc. The following answers should be coded to "Moved": Respondent moved, on vacation, going south for the winter, moved and don't want/need the phone anymore etc. The following answers should be coded to "Any other response": Sharing a phone, receiving harassing calls, getting a private number, hard of hearing, dissatisfied with the phone company, don't want other household members to receive calls, etc.

Coverage: *Respondents who do not have phones (RTS_Q01B=0)*

RTS_Q03 **Why did you cancel it?**

2	Can't afford it	
3	Moved	(Go to RTS_Q05)
4	All other responses	(Go to RTS_Q05)
8	Refused	(Go to RTS_Q05)
9	Don't know	(Go to RTS_Q05)

Note: F1 NOTES: The following answers should be coded to "Can't afford it": Too expensive, Can't afford the phone, Unpaid phone bills, Service cancelled by the phone company, Moved and can't afford the installation price, Lost job, Unemployed, I'm on... (any form of social assistance), etc. The following answers should be coded to "Moved": Respondent moved, on vacation, going south for the winter, moved and don't want/need the phone anymore etc. The following answers should be coded to "Any other response": Sharing a phone, receiving harassing calls, getting a private number, hard of hearing, dissatisfied with the phone company, don't want other household members to receive calls, etc.

Coverage: *Respondents whose reason for not having a phone is because they cancelled it (RTS_Q02=1)*

RTS_Q04 **I am going to read a list of most common charges which could be on a telephone bill. Please tell me which of these charges you find difficult to afford.**

INTERVIEWER: Read categories to respondent. Mark all that apply.

1	**The installation charge**
2	**The security deposit**
3	**Monthly charge for your basic phone line which includes local calls**
4	**Optional features and/or set charges**
5	**Long distance charges**
6	**Other usage charges** (i.e. 900 service, * features, directory assistance, etc.)
8	Refused
9	Don't know

Coverage: *Respondents who cannot afford a phone (RTS_Q02=2 or RTS_Q03=2)*

RTS_Q05 If there were an emergency at home, would members of your household have easy access to a neighbour's phone?

1 Yes
2 No
8 Refused
9 Don't know

Coverage: Those who answered "0" (0 telephone number) in RTS_Q01B

RTS_Q06 If there were an emergency at home, would members of your household have easy access to a payphone near your residence?

1 Yes
2 No
8 Refused
9 Don't know

Coverage: Those who answered "0" (0 telephone number) in RTS_Q01B

RTS_Q07 If there were an emergency at home, would any member of your household have convenient access to a telephone near your residence, at another location not already mentioned?

1 Yes
2 No
8 Refused
9 Don't know

Coverage: Those who answered "0" (0 telephone number) in RTS_Q01B

RTS_Q08 In 2002, was your total annual household income before taxes and deductions less or more than ... ($ LICO)?

1 Less than
2 More than
8 Refused
9 Don't know

Coverage: All respondents

RTS_I08 Thank you for your cooperation

13.0 Record Layout with Univariate Frequencies

Residential Telephone Service Survey (May 2003)
Public Use Microdata File

Section: **Demographic Variable**

Variable Name: **PROV1** *Position:* 1 *Length:* 2

Province

		FREQ	WTD
10	Newfoundland and Labrador	1,512	197,514
11	Prince Edward Island	1,071	53,866
12	Nova Scotia	2,369	369,873
13	New Brunswick	2,198	292,904
24	Quebec	7,453	3,109,222
35	Ontario	11,625	4,558,427
46	Manitoba	2,903	431,859
47	Saskatchewan	2,979	383,326
48	Alberta	4,085	1,170,038
59	British Columbia	3,729	1,624,276
		======	=========
		39,924	12,191,305

Residential Telephone Service Survey (May 2003)
Public Use Microdata File

Variable Name: **CMA1** *Position:* 3 *Length:* 2

Census Metropolitan Area

		FREQ	WTD
00	Non CMA	26,549	5,186,400
01	Halifax	601	142,007
02	Quebec	560	305,512
03	Montreal	1,573	1,519,024
04	Ottawa	643	354,029
05	Toronto	1,997	1,753,562
06	Kitchener	547	152,572
07	Hamilton	558	279,311
08	St. Catharines	597	166,138
09	London	563	175,965
10	Windsor	464	121,147
11	Winnipeg	1,406	282,836
12	Calgary	885	353,975
13	Edmonton	1,244	398,988
14	Vancouver	1,249	845,082
15	Victoria	488	154,756
		======	=========
		39,924	12,191,305

Section: **Telephone Service Variable**

Variable Name: **Q01B** *Position:* 5 *Length:* 1

How many different telephone numbers are there for your residence? (Include cellular phone numbers and phone numbers used for business).

		FREQ	WTD
1	0 None	587	156,109
2	1	22,817	6,707,406
3	2	10,441	3,239,880
4	3 or more	6,079	2,087,910
		======	=========
		39,924	12,191,305

Coverage: All respondents

Residential Telephone Service Survey (May 2003)
Public Use Microdata File

Variable Name: **Q01C** *Position:* 6 *Length:* 1

(Is this number for a cellular phone?) or (Are all of these numbers for cellular phones?)

		FREQ	WTD
1	Yes	671	232,969
2	No	38,631	11,793,474
6	Valid skip	587	156,109
7	Don't know	17	4,813
8	Refused	10	1,194
9	Not stated	8	2,747
		======	=========
		39,924	12,191,305

Coverage: Respondents who have at least one phone number
Note: If the phone number is for both regular and cellular phone, select <No>. A regular phone can be with a cord or cordless.

Variable Name: **Q02** *Position:* 7 *Length:* 1

Why don't you have a phone?

		FREQ	WTD
1	I cancelled it	57	13,539
2	Can't afford it	354	93,279
3	Moved	28	7,801
4	All other responses	130	36,954
6	Valid skip	39,337	12,035,196
7	Don't know	12	3,719
8	Refused	6	817
		======	=========
		39,924	12,191,305

Coverage: Respondents who do not have phones (RTS_Q01B=0)

Residential Telephone Service Survey (May 2003)
Public Use Microdata File

Variable Name:	**Q03**	*Position:*	8	*Length:*	1

Why did you cancel it?

		FREQ	WTD
1	Can't afford it	21	4,414
2	Moved	6	1,586
3	All other responses	24	6,240
6	Valid skip	39,849	12,173,230
7	Don't know	2	411
8	Refused	3	473
9	Not stated	19	4,951
		======	=========
		39,924	12,191,305

Coverage: Respondents whose reason for not having a phone is because they cancelled it (RTS_Q02=1)

Variable Name:	**Q041**	*Position:*	9	*Length:*	1

I am going to read a list of most common charges which could be on a telephone bill.
Please tell me which of these charges you find difficult to afford:
... The installation charge

		FREQ	WTD
1	Yes	274	71,919
6	Valid skip	39,615	12,110,482
7	Don't know	8	2,597
8	Refused	3	473
9	Not stated	24	5,835
		======	=========
		39,924	12,191,305

Coverage: Respondents who cannot afford a phone (RTS_Q02=2 or RTS_Q03=2)

Residential Telephone Service Survey (May 2003)
Public Use Microdata File

Variable Name: **Q042** *Position:* 10 *Length:* 1

I am going to read a list of most common charges which could be on a telephone bill.
Please tell me which of these charges you find difficult to afford:
... The security deposit

		FREQ	WTD
2	Yes	201	49,890
6	Valid skip	39,688	12,132,510
7	Don't know	8	2,597
8	Refused	3	473
9	Not stated	24	5,835
		======	=========
		39,924	12,191,305

Coverage: Respondents who cannot afford a phone (RTS_Q02=2 or RTS_Q03=2)

Variable Name: **Q043** *Position:* 11 *Length:* 1

I am going to read a list of most common charges which could be on a telephone bill.
Please tell me which of these charges you find difficult to afford:
... Monthly charge for your basic phone line which includes local calls

		FREQ	WTD
3	Yes	258	67,680
6	Valid skip	39,631	12,114,720
7	Don't know	8	2,597
8	Refused	3	473
9	Not stated	24	5,835
		======	=========
		39,924	12,191,305

Coverage: Respondents who cannot afford a phone (RTS_Q02=2 or RTS_Q03=2)

Residential Telephone Service Survey (May 2003)
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Variable Name: **Q044** *Position:* 12 *Length:* 1

I am going to read a list of most common charges which could be on a telephone bill.
Please tell me which of these charges you find difficult to afford:
... Optional features and/or set charges

		FREQ	WTD
4	Yes	142	37,074
6	Valid skip	39,747	12,145,327
7	Don't know	8	2,597
8	Refused	3	473
9	Not stated	24	5,835
		======	=========
		39,924	12,191,305

Coverage: Respondents who cannot afford a phone (RTS_Q02=2 or RTS_Q03=2)

Variable Name: **Q045** *Position:* 13 *Length:* 1

I am going to read a list of most common charges which could be on a telephone bill.
Please tell me which of these charges you find difficult to afford:
... Long distance charges

		FREQ	WTD
5	Yes	148	33,095
6	Valid skip	39,741	12,149,306
7	Don't know	8	2,597
8	Refused	3	473
9	Not stated	24	5,835
		======	=========
		39,924	12,191,305

Coverage: Respondents who cannot afford a phone (RTS_Q02=2 or RTS_Q03=2)

Residential Telephone Service Survey (May 2003)
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Variable Name: **Q046** *Position:* 14 *Length:* 2

I am going to read a list of most common charges which could be on a telephone bill.
Please tell me which of these charges you find difficult to afford:
... Other usage charges (i.e. 900 service, * features, directory assistance, etc.)

		FREQ	WTD
06	Yes	86	19,157
96	Valid skip	39,803	12,163,244
97	Don't know	8	2,597
98	Refused	3	473
99	Not stated	24	5,835
		======	=========
		39,924	12,191,305

Coverage: Respondents who cannot afford a phone (RTS_Q02=2 or RTS_Q03=2)

Variable Name: **Q05** *Position:* 16 *Length:* 1

If there were an emergency at home, would members of your household have easy access to a neighbour's phone?

		FREQ	WTD
1	Yes	491	126,501
2	No	70	24,101
6	Valid skip	39,337	12,035,196
7	Don't know	12	2,602
8	Refused	6	732
9	Not stated	8	2,173
		======	=========
		39,924	12,191,305

Coverage: Those who answered "0" (0 telephone number) in RTS_Q01B

Residential Telephone Service Survey (May 2003)
Public Use Microdata File

Variable Name: **Q06** *Position:* 17 *Length:* 1

If there were an emergency at home, would members of your household have easy access to a payphone near your residence?

		FREQ	WTD
1	Yes	317	94,005
2	No	238	54,862
6	Valid skip	39,337	12,035,196
7	Don't know	17	3,870
8	Refused	6	732
9	Not stated	9	2,639
		======	=========
		39,924	12,191,305

Coverage: Those who answered "0" (0 telephone number) in RTS_Q01B

Variable Name: **Q07** *Position:* 18 *Length:* 1

If there were an emergency at home, would any member of your household have convenient access to a telephone near your residence, at another location not already mentioned?

		FREQ	WTD
1	Yes	315	89,788
2	No	240	59,168
6	Valid skip	39,337	12,035,196
7	Don't know	14	2,963
8	Refused	8	1,234
9	Not stated	10	2,956
		======	=========
		39,924	12,191,305

Coverage: Those who answered "0" (0 telephone number) in RTS_Q01B

Variable Name: **Q08** *Position:* 19 *Length:* 1

In 2002, was your total annual household income before taxes and deductions less or more than ... ($ LICO)?

		FREQ	WTD
1	Less than	8,283	2,634,594
2	More than	27,264	8,307,147
7	Don't know	2,807	815,223
8	Refused	1,545	425,328
9	Not stated	25	9,014
		======	=========
		39,924	12,191,305

Coverage: All respondents

Residential Telephone Service Survey (May 2003)
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Section: **Weight Variable**

Variable Name: **FINWT** *Position:* 20 *Length:* 9.4

Weight - Format 9.4 (Physical decimal present) (9999.9999)

Section: **Demographic Variable**

Variable Name: **SZCODE1** *Position:* 29 *Length:* 1

Size of area of residence

		FREQ	WTD
1	Urban, population of 500,000 or more	10,126	6,094,605
2	Urban, population of 100,000 - 499,999	9,706	1,920,659
3	Urban, population of 30,000 - 99,999	3,672	971,731
4	Urban, population of 15,000 - 29,999	2,266	401,235
5	Urban, population under 15,000	5,019	1,011,607
6	Rural areas	9,135	1,791,468
		======	=========
		39,924	12,191,305

Variable Name: **SZCODE3** *Position:* 30 *Length:* 2

Size of area of residence

		FREQ	WTD
10	Urban, population of 500,000 or more	10,126	6,094,605
20	Urban, population of 100,000 - 499,999	9,706	1,920,659
30	Urban, population of 30,000 - 99,999	3,672	971,731
40	Urban, population of 15,000 - 29,999	2,266	401,235
51	Urban, population of 2,500 - 14,999	3,893	781,375
52	Urban, population under 2,500	1,126	230,231
60	Rural areas	9,135	1,791,468
		======	=========
		39,924	12,191,305

Residential Telephone Service Survey (May 2003)
Public Use Microdata File

Section: **Survey Date Variable**

Variable Name: **SDATE** *Position:* 32 *Length:* 6

Survey date(YYYYMM)

		FREQ	WTD
200305	200305	39,924	12,191,305
		======	=========
		39,924	12,191,305